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Letters

Soft-Tissue Response: Is It a Standing Obstacle in Distraction Osteogenesis?

Sir:

We read with great interest the article by Hollier et al. entitled "Distraction Rate and Latency: Factors in the Outcome of Pediatric Mandibular Distraction" (*Plast. Reconstr. Surg.* 117: 2333, 2006). Acceleration of distraction osteogenesis is a controversial area of new bone formation. Numerous disadvantages of acceleration attempts, such as malunion, nonunion, and soft-tissue complications, keep clinicians away from rapid distraction. Successful results have been reported with a distraction rate of 2 mm per day with no latency period. This is a fascinating clinical study on the rate of distraction osteogenesis.

The soft-tissue response to rapid distraction is an important factor and affects the success of new bone formation. Clinical studies in long bones have suggested lots of complications related to rapid distraction, including relapse, muscle fibrosis, neurovascular injury, joint subluxation, and stiffness.[1–4] In the sheep mandibular distraction model, it has been reported that distraction osteogenesis in the facial skeleton produces an adaptive response in muscle distracted at 1 mm per day.[5] If the distraction rate exceeds the adaptive response rate, there is a muscle fiber force deficit and susceptibility to stretch-induced injury increases.[5] We did not see any comment on soft-tissue response in the article. It seems that none of the patients exhibited soft-tissue complications. Is it because of the great elastic potential or rapid regeneration capability of soft tissues in the pediatric population? We think the cause of the effective soft-tissue compliance should be investigated and revealed.

Another extraordinary response of soft tissue to rapid distraction, especially to rapid distraction without a latency period, is prolapse of the soft tissue surrounding the distraction zone into the distraction gap. In our experimental studies, rapid distraction groups demonstrated greater soft-tissue and muscle herniation into the distraction gap (unpublished data). Maybe the maturation of the hematoma between distraction segments during the latency period contributes to keeping the surrounding soft tissue away from the distraction gap.

Soft-tissue reactions to rapid distraction in distraction osteogenesis are still controversial. In our view, there is an obvious need for more clinical research in this area. We compliment the authors on their successful results in the acceleration of distraction osteogenesis.

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Ersoy Konaş, M.D.

Mehmet Emin Mavili, M.D.

Department of Plastic and Reconstructive Surgery
Hacettepe University School of Medicine
Ankara, Turkey

Correspondence to Dr. Konaş
Hacettepe University Faculty of Medicine
Department of Plastic and Reconstructive Surgery
06100 Samanpazarı, Ankara, Turkey
konas@hacettepe.edu.tr
ersoykonas@gmail.com

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Reply

Sir:

Drs. Konaş and Mavili put forth a very valid criticism of our article, "Distraction Rate and Latency: Factors in the Outcome of Pediatric Mandibular Distraction" (*Plast. Reconstr. Surg.* 117: 2333, 2006). Very little is discussed regarding soft-tissue response to the accelerated distraction. In part, however, this is because very little difference was noted in the manner in which the soft tissue responded in these cases. Subjectively, it was felt that the scars were worse in this group of patients, although this could not be quantified. No differences in relapse or soft-tissue prolapse into the distraction gap were noted. Although, as the authors point out, clinical studies in long bones have demonstrated soft-tissue problems with rapid distraction, this cannot be directly correlated with pediatric mandibular distraction. The distraction distances are much greater in the lower extremities, and the blood supply is not as robust as it is in the pediatric facial skeleton.

It should also be pointed out that rapid distraction was not attempted in these patients to decrease the overall treatment time. The bulk of the patients' treatment time was spent in the consolidation phase. Rather, the accelerated rate of distraction was utilized primarily in an attempt to prevent premature consolidation. We have found that when patients are distracted at the standard rate of 1 mm per day, premature healing of the osteotomy site is seen far too often. This is most common with external devices, as the amount of device movement translated to the osteotomy site varies. Some of the device distraction is translated into the bending of pins, particularly when the device is positioned further from the face. Unpublished data would seem to suggest that on the order of half of the distraction is translated into bone movement.

In summary, soft-tissue response to accelerated mandibular distraction using external devices was not substantially different from that in cases of slower distraction, with the exception of subjectively poorer scarring. Real progress in distraction will be accomplished when the period of time for bone consolidation is shortened.

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Patrick Cole, M.D.

Larry Hollier, Jr., M.D.
Clinical Care Center
Houston, Texas

Correspondence to Dr. Hollier
Clinical Care Center
6621 Fannin Street, Suite 620.10
Houston, Texas 77030
larryh@bcm.tmc.edu
larryh@bcm.edu

Nonresective Shrinkage of the Septum and Fat Compartments of the Upper and Lower Eyelids: A Comparative Study with Carbon Dioxide Laser and Colorado Needle

Sir:

We read with great interest the article by Prado et al. entitled "Nonresective Shrinkage of the Septum and Fat Compartments of the Upper and Lower Eyelids: A Comparative Study with Carbon Dioxide Laser and Colorado Needle" (*Plast. Reconstr. Surg.* 117: 1725, 2006). The authors nicely describe and compare two new nonresective methods for managing the herniated fat pads of the lower and upper lids.

The conservative approach (septal plication instead of fat excision) for correcting septal herniation is not a new concept. In 1988, de la Plaza and Arroyo introduced their own blepharoplasty technique, which consisted of returning fat to the orbital cavity and retaining it by means of a continuous suture of the capsulopalpebral fascia to the periosteum of the lower orbital rim.[1] However, they applied their technique only to the lower eyelids. The septorrhaphy technique of Dr. Sensoz was published in this *Journal* in 1998, and this technique is applicable to both the lower and upper eyelids.[2] The method described by Prado et al. is also similar, plicating the septum with the laser or electrocoagulation instead of suture placement. Some authors claim that septal plication may lead to ectropion, as is also discussed by Dr. Codner (*Plast. Reconstr. Surg.* 117: 1736, 2006). In our opinion, an experienced surgeon with a good knowledge of eyelid anatomy will not face such a problem while performing septal plication. The alternative transconjunctival approach avoids incisions on the septum, allowing only fat excision; additional incisions are required to manipulate the anterior lamella structures, which are more important in giving a youthful appearance to the patient. Fat herniation usually occurs at the junction of the septum orbitale and orbital rim. The septorrhaphy of the septum is performed by either excising the weakened septal tissue, reinserting the septum to the orbital rim, or simply plicating the healthy septal tissue to the orbital rim. The formation of ectropion can usually be assessed during the operation. The surgeon should carefully check the septum for retraction beginning from the first suture to the last suture placed on the septum.[2] We also agree with the authors that "the main point seems to be the amount of manipulation rather than the elements manipulated," but since Prado et al.

used indirect methods for plication (depending on scar contracture formed after the intervention), the lack of absolute control on the amount of septum plication seems to be the major drawback of their technique. Overcorrection may lead to ectropion (as seen in two cases), and in contrast, undercorrection may lead to persistence of the bulging.

In conclusion, the authors should be congratulated on emphasizing the importance of the conservative approach in eyelid surgery and describing two new, easily applied methods for correcting fat herniation through the septum. We believe their study is a significant contribution to the literature.

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Ömer Şensöz, M.D.

Hakan Orbay, M.D.

Department of Plastic and Reconstructive Surgery
Ankara Numune Training and Research Hospital
Ankara, Turkey

Correspondence to Dr. Orbay
Eryaman Evleri. Dil Devrimi Cd. B7/16
06770 Eryaman, Ankara, Turkey
hakanorbay78@hotmail.com
hakanorbay78@yahoo.com

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Reply

Sir:

We truly appreciate the comments of Drs. Sensöz and Orbay from Turkey. The purposes of our study were to describe an alternative nonresective treatment of the fat-septum elements of the eyelids using low energy delivered with a carbon dioxide laser and a grid of electrocautery to partially desiccate and shrink the septum and underlying fat in a setback manner, and to compare its clinical outcomes.[1]

It is a fact that resection of the fat bags of the eyelids leads to a sunken and gaunt appearance of the eyes and aggravates a previous tear trough deformity.[2] This study was thought to avoid the standard plastic surgery residency teaching of blepharoplasty (surgical excision of skin, muscle, and fat) and consolidate a conservative approach, as most plastic surgeons continue to remove fat during blepharoplasty. Our residents are not experienced surgeons and sometimes find the eyelid anatomy disturbing and difficult to understand. As Dr. Codner stated, mobilizing the septum with the aid of sutures, especially after its resection, could lead to ectropion, and for inexperienced surgeons, this fine manipulation and its amount cannot be assessed during the operation. So teaching our residents to preserve fat during blepharoplasty with a simple and alternative shrinking technique as opposed to surgical tightening of the septum seemed sound, especially when electrocautery appeared to be always available, with less expense and theoretically less risk compared with laser treatment. As we stress in the article, the correction of shrinkage was stopped when the fat bag compartments were leveled and had a symmetrical contour, as determined by gentle compression of the globe; this counteracted the "absolute lack of control" of the amount of septal shrinkage.

The best control of this manipulation to avoid ectropion is with a well-performed canthopexy. (Canthopexy was never used in the cases presented in our article so that we could evaluate the pure effect of heat application over the septum-fat components of the eyelids alone.) We have modified our shrinkage technique so as to always finish the procedure with a canthopexy, making clear that this is indispensable in the presence of lid laxity.

In summary, if anyone is interested in using this technique, the following are some key points:

1. Never use the technique where there is extreme lid laxity.
2. The technique is suitable for treating young patients with moderate skin excess, adequate muscle tone, moderate to severe bulging of the fat-septal component, and no supporting alterations.
3. Allow residents to start with this simple and safe procedure, which should always be completed with a lateral retinacular suspension used as a simplified suture canthopexy[3]; this will provide a subtle but long-lasting, adequate result.

As this clinical study was a team study, all of the authors contributed to this reply.

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Arturo Prado, M.D.

Patricio Andrades, M.D.

Stefan Danilla, M.D.

Paulo Castillo, M.D.

Susana Benitez, M.D.

Division of Plastic Surgery
School of Medicine
Clinical Hospital J. J. Aguirre
University of Chile
Santiago, Chile

Correspondence to Dr. Prado
Manquehue Norte 1701 ofic 210
Vitacura
Santiago, Metropolitana, Chile
pradoplast@yahoo.com

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Investigation of Risk Acceptance in Facial Transplantation

Sir:

In their "Investigation of Risk Acceptance in Facial Transplantation,"[1] Barker et al. refer to the praise and criticism of Joseph Murray after the first successful renal transplant. In studying the history of clinical transplantation outlined by Starzl,[2] it is clear that it is a field with its fair share of controversy. Indeed, at the beginning of the twentieth century, the very first human renal transplantations utilized kidneys from pigs, sheep, goats, and subhuman primate donors.

This research by Barker and colleagues provides some interesting data. It has the inherent flaw, however, of participants speculating on how they might feel in the event of severe medical or aesthetic adverse events. Such speculation is not necessarily predictive of how an individual would actually feel if the event occurred. It is quite revealing that the disfigured group was the least accepting of facial transplantation with its immunosuppressive risks. I agree that this is most likely due to adjustment processes leading to a different "frame of reference."

It is correct that the unique viewpoint of disfigured patients should be respected, as should their freedom to choose. It should be remembered, however, that patients tend to minimize risks in their eagerness to proceed with innovative surgery.[3] Certainly the opinion of a well-informed patient is as important as that of a critic or proponent of the procedure, but when the procedure excites a polarized debate, a potential patient should perhaps be informed by both.

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Andrew J. Diver, M.R.C.S.Ed.
Northern Ireland Plastic and Maxillofacial Service
The Ulster Hospital
Belfast, Northern Ireland
andrewjdiver@hotmail.com

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Reply

Sir:

We appreciate Dr. Diver's thoughtful comments concerning our article, "Investigation of Risk Acceptance in Facial Transplantation." Our goal in the article was to document the responses of a range of subject populations to the risks and benefits of a variety of transplantation opportunities. We agree with Dr. Diver that there are methodological ambiguities associated with "participants speculating on how they might feel in the event of severe medical or aesthetic adverse events." For that reason, the larger research project solicited the responses of individuals who were uniquely qualified to comment on the issues under consideration. Not only did we ask facially disfigured individuals about their views concerning the risks and benefits of face transplants, we also asked hand amputees about their perceptions of the risks and benefits of a hand transplant, and kidney transplant recipients about the risks and benefits of a kidney transplant. The facially disfigured and hand amputees were well positioned to describe the risks that they would take to derive the benefits of a transplant. Conversely, the kidney transplant recipients had doubtless spent considerable time weighing the risks and benefits of the procedure that they had undergone. Our finding that kidney transplant recipients, who were intimately familiar with the dangers of immunosuppression, would undergo even more risk to receive a face transplant than a new kidney testifies to the importance of the face in human life.

We conclude by agreeing with Dr. Diver that patients are in the best position when they are informed about both sides of a polarized debate. The views of knowledgeable patients simply contribute one piece of such information.

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John H. Barker, M.D., Ph.D.
Plastic Surgery Research
Michael Cunningham, Ph.D.
Department of Communication
University of Louisville
Louisville, Ky.

Correspondence to Dr. Barker
Plastic Surgery Research
University of Louisville
511 South Floyd Street
320 MDR Building
Louisville, Ky. 40202
jhbark01@louisville.edu

Mini Face Lift with Suspension Sutures: Historical Analysis of Development and Morphic Resonance

Sir:

Tonnard and Verpaele are to be credited for popularizing the mini face lift with suspension sutures, a technique today known worldwide as the minimal access craniofacial suspension suture lift, as they

termed it.[1–3] We also use a modification of this technique, which we probably would not have used until now without reading their publications and hearing their presentations at international meetings. Their comprehensive book, published by Quality Medical Publishing in 2004, is well worth buying and reading to gain a close understanding of the basic ideas behind this technique and the fine details for this type of mini face lifting. However, from a close review of their book and publications as well as a further review and search of the literature, it is very unfortunate that they failed to mention their predecessors with this suture suspension technique.

A search of the literature readily shows us that, in 1997, Duminy and Hudson,[4] from Cape Town, South Africa, were actually the first authors to report the use of a minimal access craniofacial suspension lift with two suspension sutures; they described a series of 35 patients with an average follow-up of more than 1 year. Almost 4 years later, 1 year before Tonnard et al.'s publication,[1] Fulton et al.[5] also reported on the use of a minimal access craniofacial suspension lift with the use of two craniofacial suspension sutures. They called these suspension sutures the U and O sutures, a term that was later also advocated by Tonnard and Verpaele.[2]

As Hamra[6] wrote recently in his letter to the editor, "We all know the familiar writing style in scientific journal articles whereby an author conveniently omits published work when that work may not support his thesis or may predate his observations. Often this is innocent and inadvertent, as one naturally cannot list every reference. . . . However, with the topic on the use of craniofacial suspension sutures, which is so new and has so few papers published, one has cause to wonder." Why were these predecessors not mentioned in the writings and presentations of Tonnard and Verpaele?

A thorough review of their literature shows that it is quite obvious that at least Fulton et al.'s publication[5] was not missed in Tonnard et al.'s literature search.[1] They very briefly and hardly recognizably mention this publication in the discussion section of their initial article in *Plastic and Reconstructive Surgery*, stating that "[a]lso the combination of centrofacial laser resurfacing and a [minimal access craniofacial suspension suture] lift can be performed with great safety." In not providing further details, they did not credit Fulton et al.[5] for their earlier, probably inspiring, work on a minimal access craniofacial suspension lift with suspension O and U sutures, as Tonnard and Verpaele have also named their craniofacial suspension sutures.[2] They did not mention these publications and facts in their subsequent textbook. Their textbook contains a section on "the history and evolution of rhytidectomy," in which they review what is in their opinion the most essential work in the history of face lifting techniques in relation to their work. Tonnard and Verpaele even cited a Chinese proverb: "When you drink water, remember the spring."

By means of this letter, we would like to give credit to those whom others have forgotten to mention in the success story of the minimal access craniofacial suspension suture lift. Duminy and Hudson[4] were the first to publish in the English-language literature on a minimal access craniofacial suspension lift with suspension sutures, and Fulton et al.[5] followed with their work.

So what should we learn from this letter and actual situation? That one should review the literature thoroughly when publishing new ideas and thoughts, and that one should give credit to one's predecessors, even if one has never heard of them, when describing a brilliant new idea. It is known that although similar ideas and thoughts arise in more than one place in the world seemingly independent of one another, they might actually be more closely associated because of the mysterious phenomenon of morphic resonance.[7] Letterpress printing was discovered in more than one place in the world, and it would be a shame not to mention all who have contributed. We all stand on the shoulders of giants,[7] and we should credit these giants. We, the authors of this letter, credit Tonnard et al. for their excellent work on further developing and popularizing the minimal access craniofacial suspension suture lift, but credit should also go to the original inventors.[5,6]

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Berend van der Lei, M.D., Ph.D.
Department of Plastic, Reconstructive, Aesthetic, and Hand Surgery
Medical Center of Leeuwarden
Leeuwarden, the Netherlands
Private Clinic Heerenveen
Heerenveen, The Netherlands
Department of Plastic, Reconstructive, Aesthetic, and Hand Surgery, University Hospital of Groningen
Groningen, The Netherlands

Michel Cromheecke, M.D., Ph.D.
Department of Plastic, Reconstructive, Aesthetic, and Hand Surgery
Medical Center of Leeuwarden
Leeuwarden, The Netherlands
Private Clinic Heerenveen
Heerenveen, The Netherlands

Stefan O. P. Hofer, M.D., Ph.D.
Department of Plastic and Reconstructive Surgery
Erasmus Medical Center
Rotterdam, The Netherlands

Correspondence to Dr. van der Lei
Department of Plastic, Reconstructive, Aesthetic, and Hand Surgery
Medical Centre of Leeuwarden
Leeuwarden, Friesland 8934 AD, The Netherlands
heslei@planet.nl
b.van.der.lei@znb.nl

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Reply

Sir:

It is with interest that we have read the letter by van der Lei et al. They point out that the bibliography in our book, *The MACS-lift Short Scar Rhytidectomy*, is not comprehensive. We never pretended so and are convinced that a bibliography is a list of the scientific works that inspired the author to produce his or her publication. Dr. van der Lei and coworkers need to be congratulated for the thoroughness of their literature search. It is virtually impossible to read every literature item that could be related to the work one intends to publish. Sometimes one comes across a related article purely by coincidence. Indeed, there is a myriad of publications about "mini face lift," "mini rhytidectomy," "minimal face lift," "minilift," "minimal incision rhytidectomy," and so on, and it is only by *reading* the article *in extenso* that one can determine whether it really refers to one's own work. In MEDLINE, the search term "minimal incision AND face lift" alone delivers 32 references.[1–32] Most of us select relevant references on the basis of the published abstract. Neither the abstract nor the title of Duminy and Hudson's article[33] mentions the use of purse-string sutures, and this is probably the reason why we overlooked it at the time of our publication. This article indeed shows interesting similarities as to the use of purse-string sutures on the subcutaneous tissues, as described by Saylan.[34] It was Saylan's 1999 article in the *Aesthetic Surgery Journal* that drew our attention to the possibilities of using purse-string sutures in the face.

In their article, Fulton et al.[35] describe their experience with Saylan's S-lift, without adding anything new. Their article was published after we submitted our article "Minimal Access Cranial Suspension Lift: A Modified S-lift", which appeared in *Plastic and Reconstructive Surgery* in 2002. We later included it in the bibliography of our book, *The MACS-Lift Short-Scar Rhytidectomy*.

It is regrettable that we overlooked Duminy and Hudson's article, but this was certainly because of unawareness rather than negligence or, even worse, intentional omission.

One has to wonder though whether "being the first" is the essence of publishing one's work. Was Illouz the first to aspirate subcutaneous fat? Was Coleman the first to put it back into the body? Was Lejour the "inventor" of the vertical scar mammaplasty? Probably not. But they made these procedures work and popularized them. Without their efforts, we would probably still be reluctant to transplant or even suction fat, and the breast reduction scars would still be popping out of women's brassieres on the lateral and medial sides because "that's the way it is."

There is no such thing as an "original inventor" of a surgical procedure. Any "new" surgical technique is always the result of a combination of several ideas that have been tried out sometimes many years before. We are the first to acknowledge that. Duminy and Hudson can indeed be considered the predecessors of a whole generation of facial rejuvenation procedures of which the minimal access craniofacial suspension suture lift is a part. We will definitely include their work in the new edition of our book and in any related publications in the future.

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Patrick L. Tonnard, M.D.
Alexis M. Verpaele, M.D.
Koenraad Van Landuyt, M.D.
Moustapha Hamdi, M.D.
Coupure Center for Plastic Surgery
Gent, Belgium

Correspondence to Dr. Tonnard
Coupure Center for Plastic Surgery
Coupure Rechts 164 C-D
Gent B-9000, Belgium
p.tonnard@mediring.be

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Use of an Expanded Temporoparietal Fascial Flap Technique for Total Auricular Reconstruction

Sir:

We read with great interest the article by Park and Mun entitled "Use of an Expanded Temporoparietal Fascial Flap Technique for Total Auricular Reconstruction." We congratulate the authors on their useful effort. Although the postoperative photographs of their patients are quite impressive, there are a few points which we would like to discuss further.

As a sort of silicone implant, tissue expanders placed anywhere within the body do certainly lead to the formation of a thick, dense fibrotic capsule around the expander.[1] The authors state that they completely remove this capsule in the second stage of their procedure. In our opinion, however, complete removal of such a fibrotic capsule from thin fascial tissue, which is thinner after tissue expansion, is a difficult surgical intervention that may damage the vascularity of the underlying temporoparietal fascia tissue.

Another point to be questioned is the limited expandability of a 1-month-old skin graft. The well-known tendency of a split-thickness skin graft to contract and get thicker after graft take is an additional obstacle against the expansion procedure, which is performed under temporal fascia tissue that is not quite an expandable structure itself.

The authors prefer the scalp for the thick split-thickness donor site. The potential risks and complications of the scalp as a thick split-thickness skin graft donor site have been discussed in the literature.[2] The rapid healing potential of the scalp as a donor site for split-thickness skin grafts is actually valid for thin grafts (i.e., thinner than 0.25 mm).[3] When one attempts to harvest a thick split-thickness skin graft, one should consider the risk of alopecia, which is not acceptable for a patient who is seeking a better aesthetic appearance for an absent ear. Moreover, the need to shave hair makes the patient look like he or she has undergone some kind of psychological trauma, especially in female patients.

We think that illumination of above-mentioned points will contribute to the scientific value of this significant study. We thank Dr. Park and Dr. Mun for their interesting work.

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Metin Kerem, M.D.

Hakan Orbay, M.D.

Ömer Şensöz, M.D.

Second Department of Plastic and Reconstructive Surgery
Ankara Numune Training and Research Hospital
Ankara, Turkey

Correspondence to Dr. Kerem
Beril Sitesi 449. Sokak No. 27
06530 Umitkoy, Ankara, Turkey
metinkerem39@yahoo.com

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Reply

Sir:

I thank Dr. Kerem and colleagues for their interest in our article, "Use of an Expanded Temporoparietal Fascial Flap Technique for Total Auricular Reconstruction." With regard to their three points of comment—the removal procedure for the capsule, the thickness of the scalp graft, and the expansibility of grafted skin—I would like to present further clarification.

By using the expression "complete removal of the capsule," my coauthor and I meant the removal of the entire capsule area rather than removal of the full-layered capsule. However, I would like to comment more on the capsule removal. We encountered two situations during capsule removal. First, when the temporoparietal fascia was used as a wraparound regional flap to cover the expander, the capsule became present on the superficial side of the fascia. The vessels were located on the superficial side of the fascia, so the capsule had to be carefully removed in order not to damage the vessels. (When the capsule consists of multiple layers, it is not possible to remove full layers of the capsule.) Meanwhile, when the expander was wrapped with a free flap harvested from the opposite temporoparietal side, we attached the deeper side of the fascia to the expander; therefore, when the capsule formed on the deeper side of the fascia, most of the capsule layers could be removed safely.

My coauthor and I prefer to harvest the rather thicker skin from the scalp using a no. 15 scalpel. To prevent postoperative complications at the donor site, such as delayed epidermization, folliculitis, concrete scalp deformity, or focal alopecia, we regraft pieces of ultrathin scalp skin to the donor site.[1–4] The ultrathin skin is harvested using a razor. Thicker scalp skin provides less secondary contracture and better skin quality. In addition, we did not experience limited expansibility of the grafted skin in any of the presented cases. This might have been due to the thicker grafted skin.

We hope that these clarifications will prove satisfactory to Dr. Kerem and colleagues.

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Chul Park, M.D.

The Seoul Center for Developmental Ear Anomalies
Department of Plastic Surgery
Korea University College of Medicine and Anam Hospital
126-1, 5th, Anam-Dong, Seongbuk-Gu
Seoul 136-705, South Korea
chul-park@korea.ac.kr

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Preservation of Digital Palmar Veins to Avoid Venous Congestion in Heterodigital Arterialized Flaps

Sir:

We read with interest three articles recently published in *Plastic and Reconstructive Surgery* about heterodigital arterialized flaps for finger and hand reconstruction.[1–3] It is generally agreed that the main problem with these flaps is venous congestion.[1–4] The authors introduced the use of a dorsal vein from the donor finger to reduce postoperative venous congestion. Although it was successful, this method had the disadvantage of decreasing the reach of the flap, particularly when it was used to reconstruct nonadjacent finger defects.[1] To extend the reach of the flap, they successively explored the possibility of vein division and secondary anastomosis[2] as well as cross-finger transfer,[3] with obvious pros and cons.

Venous drainage of the fingers, studied by Moss et al.,[5] involves the palmar and dorsal systems. The dorsal system corresponds to the veins used by the authors, while palmar system is subdivided into a superficial system and a deep system. The deep system is composed of the venae comitantes of the proper and common digital arteries, while the superficial system, which is located subdermally, drains either dorsally or into the deep system.

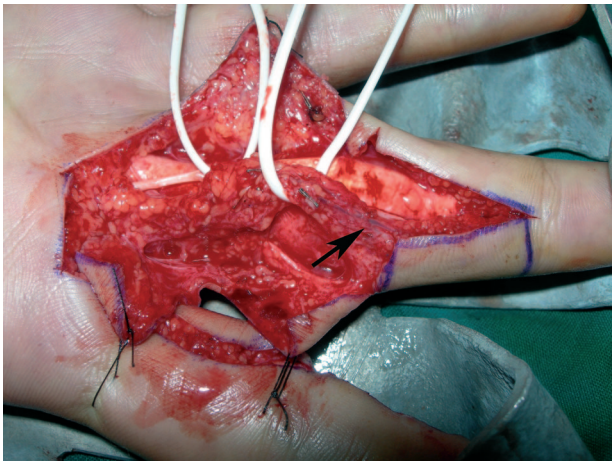

Fig. 1. Pedicle dissection. The *arrow* shows the palmar vein preserved superficially. The digital nerve is dissected free from the artery.

The causes of postoperative congestion have been imputed to injury to the venae comitantes during dissection of the digital artery from the digital nerve, despite the use of loupes and meticulous technique. In their first article, Teoh et al. reported in the description of the flap dissection the division and cauterization of the abundant palmar veins.[1]

In our experience, a simple procedure to avoid the necessity of dorsal vein dissection is to maintain the integrity of the superficial palmar veins, which we preserve at the immediate subdermal level embedded in the surrounding subcutaneous tissue (Fig. 1). By harvesting a thick pedicle, from which the digital nerve is carefully peeled off, the double system of palmar veins is conserved. Thanks to the multiple connections of the superficial route, with venae comitantes at every level (proper digital, common digital, and palmar arch arteries), it is possible to obtain perfect venous drainage in the postoperative period (Fig. 2). The single pedicle allows the surgeon to extend the reach of the flap to noncontiguous defects. The operative times are also reduced, and it is not necessary to perform vessel anastomosis. We think this note could simplify and increase the use of this versatile flap in finger and hand reconstruction.

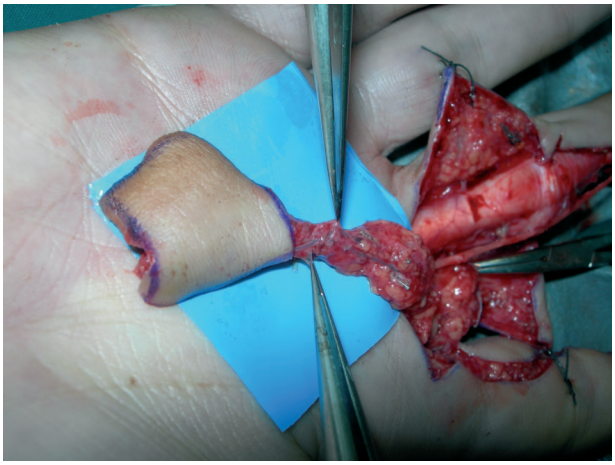

Fig. 2. Flap dissection is completed. The superficial veins are patent and draining, and the flap is not congested.

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Antonio Rampazzo, M.D.

Bahar Bassiri Gharb, M.D.

Franco Bassetto, M.D.
Plastic Surgery Clinic
University of Padova
Padova, Italy

Correspondence to Dr. Rampazzo
Plastic Surgery Clinic
University of Padova
Via Giustiniani, 2
35100 Padova, Italy
antonio.rampazzo@libero.it

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Reply

Sir:

We thank doctors Rampazzo, Gharb, and Bassetto for their interest in our three earlier articles on the application of the heterodigital arterialized flap and its various modifications,[1–3] and for sharing their valuable experience. We congratulate them also for their excellent alternative technique to preserving the venous drainage of the arterialized flap, a rational approach supported by previous anatomic studies[4] and the experience of other authors.[5] It is certainly an approach that we might consider using should we have a suitable case in the future.

Moss et al.[5] highlight several important issues regarding the palmar superficial veins: (1) The superficial palmar networks are surrounded by a sheath of fine connective tissue that encases them in a cushion of fat globules, which serve to support the superficial veins, emphasizing that they will collapse when this sheath is removed or disrupted; (2) a system of valves is present to direct flow from distal to proximal, from palmar to dorsal, and from radial to ulnar; (3) communications

via the palmar superficial veins and the dorsal system are present throughout the digit via "dorsal oblique communicating veins" but are larger and most numerous at the level of the middle of the proximal phalanx; and (4) the palmar veins correspondingly become smaller and less regular over the proximal phalanx. This forms the basis for our rationale of including the dorsal digital venous system, since this appears to be the normal physiological route of venous drainage.

We also note from our own experience that the superficial venous system described by Moss et al.[5] follows a tortuous course and might be seen as a plexus rather than an axial conduit. This would require a sufficiently large and thick soft-tissue pedicle to ensure that adequate drainage is achieved. While the benefits in terms of reducing operative time and eliminating the need for microsurgical anastomosis are useful, such a pedicle would be less mobile and unable to stretch as far as an independent arterial pedicle can. Therefore, the reach of the flaps has to be carefully ascertained before delivery, and a correspondingly larger tunnel has to be created to accommodate the more bulky pedicle when transferring the flap to the recipient location.

Nonetheless, this technique is a useful adjunct and highlights the flexibility and usefulness of this flap. With its many variations and modifications and potential applications, we believe this flap will continue to be a useful tool for hand surgeons. It offers the advantages of a single-stage pedicled flap that is thin, mobile, and hemodynamically stable, providing like-for-like tissue reconstruction particularly suited to the needs of the hand.

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Jonathan Yi-Liang Lee, M.R.C.S.Ed., M.Med.(Surg.), F.A.M.S.

Lam-Chuan Teoh, F.R.C.S.(Glas.), F.A.M.S.

Department of Hand Surgery
Singapore General Hospital
Singapore, Republic of Singapore

Correspondence to Dr. Lee
Department of Hand Surgery
Singapore General Hospital
Singapore 169608, Republic of Singapore
leeyiliang@pacific.net.sg

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1. Teoh, L. C., Tay, S. C., Yong, F. C., Tan, S. H., and Khoo, D. B. A. Heterodigital arterialized flaps for large finger wounds: Results and indications. *Plast. Reconstr. Surg.* 111: 1905, 2003.
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Staged versus Simultaneous Bilateral Endoscopic Carpal Tunnel Release: An Outcome Study

Sir:

We read with interest the article by Nesbitt et al. about staged versus simultaneous bilateral endoscopic carpal tunnel release (*Plast. Reconstr. Surg.* 118: 139, 2006). The authors stated that the postoperative disability is no greater than that after simultaneous release.

Functional status was assessed preoperatively and at the 6-month postoperative follow-up. Patients tend to forget the difficulties they encountered postoperatively in opening a jar, picking up a coin, or carrying a bag of groceries. When asking patients 6 months postoperatively whether they encountered any problems during the first postoperative weeks, there might be recollection errors.

Keeping in mind the effect of patient recollection error,[1,2] the result of this study might be overestimated.

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Jeroen van Uchelen, M.D.

Peter Houpt, M.D., Ph.D.

Department of Plastic, Reconstructive, and Hand Surgery
Isala Klinieken
Zwolle, The Netherlands

Correspondence to Dr. van Uchelen
Isala Klinieken Zwolle
Department of Plastic, Reconstructive, and Hand Surgery
Room P3.07, P.O. Box 10400
8000 GK Zwolle, The Netherlands
jhvanuchelen@hotmail.com

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Reply

Sir:

My coauthors and I thank Drs. van Uchelen and Houpt for their interest in our article on staged versus simultaneous bilateral endoscopic carpal tunnel release.

At the 6-month postoperative encounter, our patients reported their symptoms and function at that time. The Levine-Katz self-administered questionnaire, which we administered at the preoperative assessment and at the 6-month postoperative follow-up visit, requires that patients recall their symptoms and their ability to complete activities of daily living (such as buttoning clothes, opening jars, bathing, and dressing) over the 2-week period before the postoperative visit.[1] Therefore, recollection error should not have had an effect on the results of our study.

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E. F. Shaw Wilgis, M.D.
The Curtis National Hand Center
Union Memorial Hospital
3333 North Calvert Street
JPB-mezzanine
Baltimore, Md. 21218
shaw.wilgis@medstar.net

REFERENCE

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Hernia Repairs in Postbariatric Patients

Sir:

I read with interest Dr. Michele Shermak's article entitled "Hernia Repair and Abdominoplasty in Gastric Bypass Patients" (*Plast. Reconstr. Surg.* 117: 1145, 2006). Dr. Shermak retrospectively reviewed 40 patients who had undergone open incisional hernia repair combined with panniculectomy after massive weight loss. She describes opening the abdominal cavity and lysing adhesions and then repairing the hernia. In his discussion of her article, Dr. Aly mentions his concerns about plastic surgeons operating in the abdominal cavity unless they have been performing intra-abdominal procedures in the recent past. The risks associated with opening the abdominal cavity, whether it is done by a plastic surgeon or a general surgeon, are certainly well known, and if they can be avoided, they should be. These risks, which can be as significant as bowel perforation, can affect quality of life, hospital stays, and the need for further surgical intervention. As Dr. Shermak states, this patient population is unique and often presents with attenuated fascia, which allows for a primary repair that is not otherwise possible in the non–massive weight loss population. This ability to close the fascia primarily has allowed my group, with Dr. Gary Anthone, bariatric surgeon, to develop a technique for hernia repair that avoids opening the abdominal cavity and therefore avoids all possibility of intra-abdominal complications. However, due to the nature of these patients' attenuated fascia, we have utilized onlay fascia to minimize the risk of hernia recurrence in our series of 50 patients. The increased complication rates predicted by Dr. Shermak have not been seen, and unlike in her series, we have not seen a recurrence of the hernia. The results of our 50-consecutive-patient series were presented at the 21st Annual Meeting of the American Society for Bariatric Surgery, in San Diego, California, June 16, 2004, and published in *Surgery for Obesity and Related Diseases* (1: 458, 2005). I believe that this technique is a safer procedure, with less risk for the patient and the plastic surgeon as well as better results.

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Susan E. Downey, M.D.
University of Southern California
1301 Twentieth Street, Suite 470
Santa Monica, Calif. 90404
sdowney@surgery.usc.edu
sdowneymd@aol.com

Reply

Sir:

I thank Dr. Downey for her interest in the article. I appreciate the opportunity to reply to the issues she raises.

First is her question with regard to the role of plastic surgeons in hernia repair. At the Bariatric Center of Excellence at Johns Hopkins, patients achieving massive weight loss after gastric bypass who require panniculectomy and incisional hernia repair are referred to plastic surgeons on the team. Throughout the United States, most plastic surgeons have participated in general surgery training programs, where there is a large amount of experience to be had in hernia repair. At the annual meeting of the American College of Surgeons in Chicago this year, most of the surgeons on the hernia panel were plastic surgeons. Traditional teaching prescribes clear visualization of intra-abdominal structures, and this is more favorable to blind closure of the hernia sac due to the risk of bowel perforation that could occur with placing a large needle through attenuated fascia around an incisional hernia. Other concerns include incarceration of bowel or fat within the closure if these structures are not visualized during approximation of fascia. In most cases, the omentum is adhered up to the hernia sac and beyond the edges of the hernia sac. The omentum comes down easily with careful dissection. In cases where bowel adhesions are stuck to or around the hernia sac, my general surgery colleagues assist in taking adhesions down; this has occurred five times in my current experience of 96 cases. By gaining access to the peritoneal cavity, we are also better able to explore for other distinct, smaller, satellite hernias that frequently occur and may be less obvious in a supine patient under anesthesia with a relaxed abdominal wall. The Bariatric Center's division of labor has resulted in streamlined patient care and concentrated, specialized experience on the part of plastic surgeons, who competently and successfully perform hernia repair and teach it to the surgical residents.

Dr. Downey advocates for the value of mesh in hernia repair in the massive weight loss patient. Massive weight loss patients with hernias are a distinct population with tissue excess, not tissue deficiency. This redundancy of fascial tissue not only affords primary repair but also allows plication over top of the hernia repair, in effect, an autologous fascial reinforcement. My practice includes complex abdominal wall reconstruction for other patient populations as well, and patients presenting with problems after prior hernia repairs often have problems secondary to mesh utilization. Seromas, pain

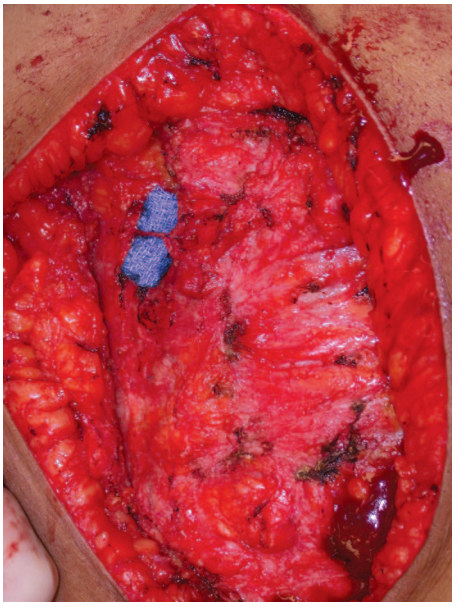

Fig. 1. This patient had hernia repair with mesh at the time of her open gastric bypass procedure, and she suffered from pain localized in the upper abdomen, to the right of midline. The photograph was taken at the time of exploration and includes the abdominal wall from the umbilicus to the xiphoid, where a large nerve branch was found traveling directly into the edge of the mesh, a neuroma confirmed by pathologic analysis. This was excised.

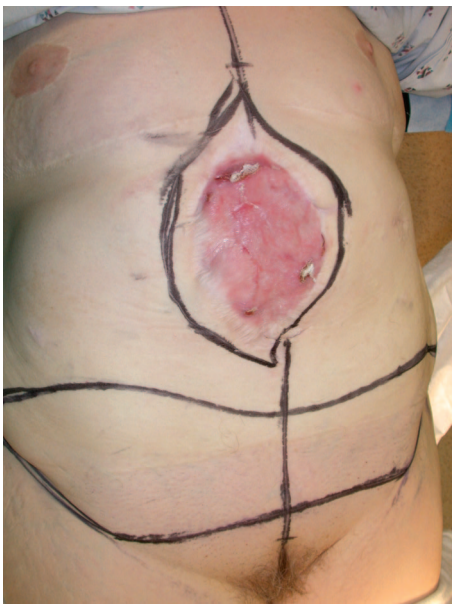

Fig. 2. This patient underwent open gastric bypass surgery with concomitant hernia repair with mesh. She had seroma and wound-healing complications resulting in a chronic nonhealing wound with mesh exposure. After her weight loss, she was brought to the operating room for mesh removal and complex hernia repair in conjunction with general surgery. Conservative panniculectomy without undermining was also performed.

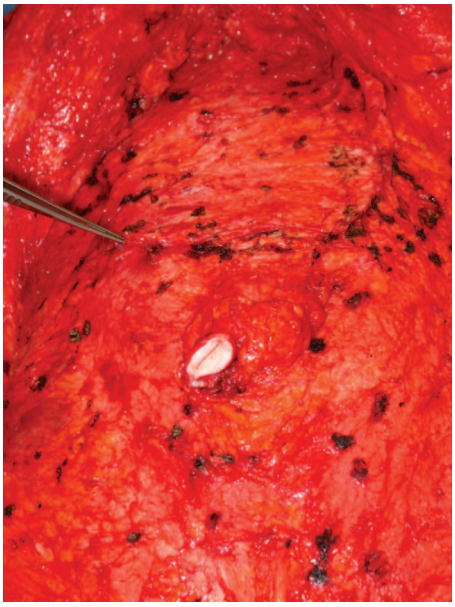

Fig. 3. Mesh edges do not completely incorporate. This patient, who had undergone open gastric bypass surgery with mesh repair of an existing hernia, presented for abdominal panniculectomy and abdominal wall tightening. In these cases, mesh redundancy at the edge is trimmed and mesh is plicated to address laxity of the abdominal wall after massive weight loss.

syndromes, infections, and wound-healing problems have all been attributed to mesh repairs (Figs. 1 through 3). Mesh also adds to the cost of the procedure. Mesh is a foreign body that need not be introduced in hernia repair unless absolutely necessary, which, in the case of the massive weight loss patient, is typically not the case.

Dr. Downey has published her experience with hernia repair in *Surgery for Obesity and Related Diseases*, the journal of the American Society for Bariatric Surgery. This is a retrospective analysis of 50 patients, with a mean panniculectomy weight of 3 kg. The hernia repair consisted of fascial plication with mesh overlay. The average length of hospital stay was 4 days, and seromas occurred in 20 patients (40 percent). Although she reports that her results are better, it is unclear how Dr. Downey came to this conclusion, performing a side-by-side comparison. Our series, published in *Plastic and Reconstructive Surgery*, with a longer follow-up (23 months versus 18 months), presents patients with greater average weight loss (69 kg versus 59 kg), greater panniculectomy weight (4.5 kg versus 3 kg), lower seroma risk (12.5 percent versus 40 percent), and shorter mean length of stay by a day (3 days versus 4 days). These data are significant in light of the iatrogenic infection risk and cost. There were no intra-abdominal complications. It is possible that seroma was a greater problem for Dr. Downey because of the foreign-body presence. Wound complications were comparable. Dr. Downey presents neither "better results" nor a "safer procedure."

I have really enjoyed both the reconstructive and aesthetic aspects of body contouring for massive weight loss patients, a perfect marriage of cosmetic body contouring guided by reconstructive principles from both general and plastic surgery. I also enjoy the multidisciplinary approach to the massive weight loss patient and the manner in which specialists with different yet complementary areas of expertise come together to create a satisfied, healthy, functional patient. Mostly, I have enjoyed learning from the dialogue I share with my plastic surgery colleagues, who are evolving and improving their techniques, taking results to the highest possible level while holding patient safety as a priority. I look forward to seeing more in the literature about this unique and growing population.

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Michele Arlene Shermak, M.D.
Department of Plastic Surgery
Johns Hopkins Medical Institutions
4940 Eastern Avenue, Suite A640
Baltimore, Md. 21224
masherma@jhmi.edu

The "Reverse" Latissimus Dorsi Myocutaneous Flap for Reconstruction of the Gluteal Region

Sir:

We read with interest the article by Muramatsu et al. entitled "Experiences with the 'Reverse' Latissimus Dorsi Myocutaneous Flap" (*Plast. Reconstr. Surg.* 117: 2456, 2006) and would like to commend the authors for an interesting article. It is refreshing to see, in this age of ultramicrosurgery, that basic plastic surgery techniques and time-proven flaps still have their use, even if only as "lifeboats," as Sir Harold Gillies wrote in *The Principles and Art of Plastic Surgery*.[1]

The authors state, "with the exception of spinal cord syndrome, use of the reverse latissimus dorsi myocutaneous flap for reconstructive surgery has to our knowledge been very rare." We would like to draw the authors' attention to our own communications presenting our experience with the use of the "reverse" latissimus dorsi flap in the reconstruction of difficult lumbar, gluteal, and flank defects in four cases.[2–4] One case in particular is very similar to cases 2 and 3 presented by the authors (Fig. 1).

We have found the "reverse" latissimus dorsi flap to be a very reliable reconstructive option, and we would like to remind readers of some of its advantages:

- It does not require a microsurgical setup.
- It does not suffer from the complications of free flaps in general.
- It submits the patient to a much shorter operation.
- If the defect is relatively small, only a portion of the muscle needs to be harvested, leaving a functional part behind, which is very important in paraplegic patients.
- The flap retains its sensory innervation from the intercostal nerves, and thus is sensate.

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George J. Zambacos, M.D.

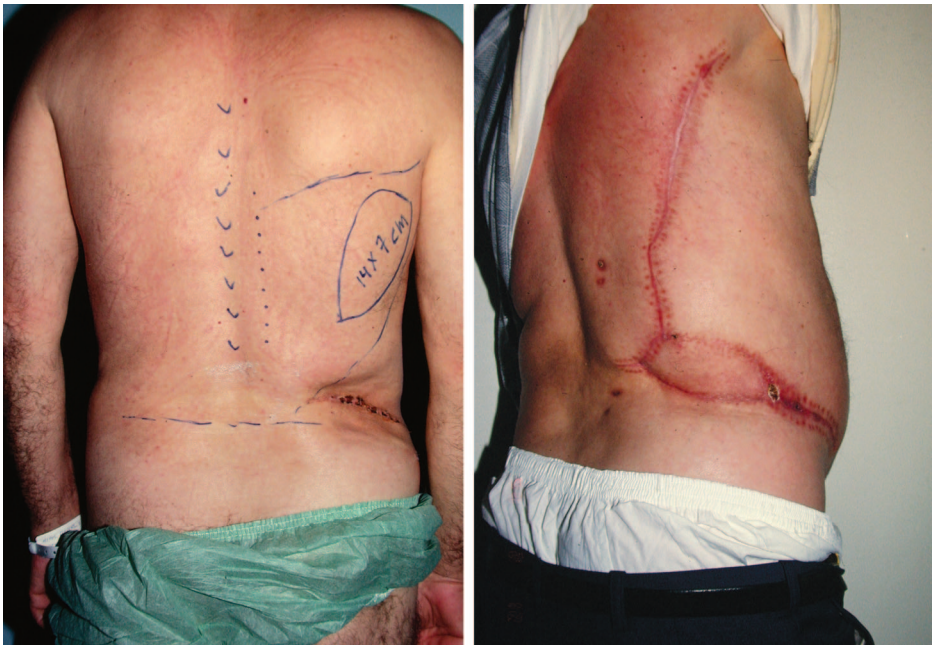

Fig. 1. A 55-year-old man with a well-differentiated liposarcoma. (*Left*) Preoperative markings for a "reverse" latissimus dorsi myocutaneous flap. (*Right*) Postoperative view at 6 weeks.

Apostolos D. Mandrekas, M.D.
Arion Plastic Surgery Center
Athens, Greece

Correspondence to Dr. Zambacos
27 Skoufa Street
Athens 10673, Greece
gzambacos@aestheticsurgery.gr

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Free Microdissected Thin Groin Flap Design with an Extended Vascular Pedicle; Thin Anterolateral Thigh Perforator Flap Using a Modified Microdissection Technique

Sir:

We read with great interest two articles recently published in *Plastic and Reconstructive Surgery*, namely "Free Microdissected Thin Groin Flap Design with an Extended Vascular Pedicle"[1] and "Thin Anterolateral Thigh Perforator Flap Using a Modified Microdissection Technique and Its Clinical Application for Foot Resurfacing."[2]

If microsurgical reconstruction is to be advanced, then it is essential to further refine flap reconstruction procedures in three main ways: to improve the quality of the outcome (both aesthetically and functionally) at the recipient site, to reduce overall morbidity, and, finally, to simplify procedures to reduce operative time and broaden applicability. These factors are clearly interdependent in many ways, and the two articles beautifully demonstrate elegant technical modifications to permit uniform, radical, primary thinning of skin flaps with low donor-site morbidity. Kimura and Saitoh[1] should be particularly commended in this regard for their refinement of the groin flap. In so doing, they minimized secondary revisionary procedures, and by enhancing outcomes, they broadened the flap's indications to encroach into the traditional territory of the skin graft as the first choice for reconstruction.

To facilitate hemostasis, thinning is appropriately carried out in both articles before flap transfer, using the differing morphologies of the superficial and deep fat layers as a guide to preserving the subdermal vascular plexus by which the thin perforator flap perfuses. For both techniques, the thinning procedure is carried out using microscope magnification. Kimura and Saitoh[1] first confirm the pedicle anatomy, microdissecting it into the superficial fat before completing elevation of the flap in the superficial fat layer, whereas Yang et al.[2] raise the flap subfascially and only thin it after completing proximal pedicle dissection. Both techniques have logic, and demonstrable efficacy, but it is our belief that neither technique optimally addresses the need to reduce operative time and simplify flap procedures to enhance uptake within the reconstructive community, while retaining safety and quality of outcome.

Cadaveric anatomical dissection of perforator flaps at various sites confirms perforator arborization into the subdermal plexus, as is depicted in the illustrations in Kimura and Saitoh's article.[1] This plexus lies both within the basal dermis and immediately beneath it, where the dermis blends with the superficial adipose layer (Fig. 1). We contend that the smaller, brighter lobules of this layer can be easily differentiated from the deeper adipose layer using loupe, rather than microscope, magnification, and it is our experience that thin perforator flaps can always be raised in this plane, after identification of the source perforator. Since the right layer can be found easily, primarily raising the thin flap is faster and no less reliable than thinning after raising the full-thickness flap as described by Yang et al.[2] The most important thing is to leave a continuous layer of subdermal fat on the flap to ensure that damage to the subdermal plexus is avoided. Once the region of perforator arborization is reached, dissection is deepened to the suprafascial plane, and perforator dissection proceeds proximally to include the source vessel as required. Finally, one uses finer instruments to ante-

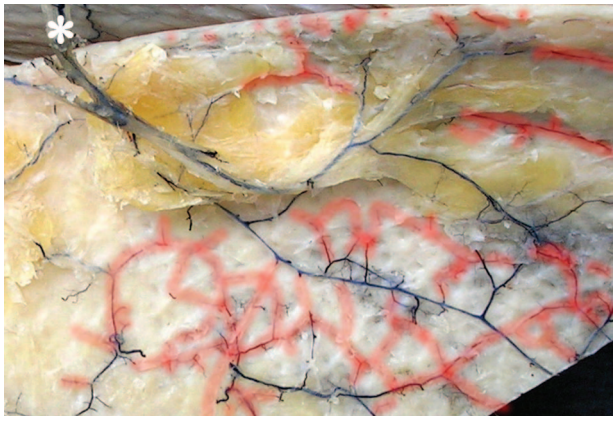

Fig. 1. Cadaveric dissection of a thin anterolateral thigh flap. The perforator (*) arborizes into the subdermal plexus via several branches that run through the deep and superficial fat layers. The subdermal plexus is seen to be located within both the deep dermis and the immediate subdermal fat. Ramifications of the plexus are highlighted in *red* and provide communication between different perforator arborizations and perforators.

gradely dissect the perforator out of the residual deep adipose layer before tissue transfer.

Although the removal of fat lobules from between the perforator's terminal arborizations, as described by Yang et al.,[2] is technically elegant, we do not believe that this is routinely necessary to the application of a thin flap, and by making the procedure excessively exacting, it may compromise widespread uptake of the technique.

Our practice has shown that we are able to raise from various donor sites thin perforator flaps of the same dimensions mentioned by the authors of both articles, but by avoiding the need to use the microscope during the raising and thinning of the flap, the procedure is made shorter and simpler and is more easily learned by the new surgeon.

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Jörg Dabernig, M.D.

Stuart Watson, F.R.C.S.(Plast.)

Andrew Hart, M.D., Ph.D.
Canniesburn Plastic Surgery Unit
Glasgow, United Kingdom

Correspondence to Dr. Dabernig
Canniesburn Plastic Surgery Unit
Royal Infirmary, Jubilee Building
84 Castle Street
Glasgow G4 0SF, United Kingdom
joerg.dabernig@gmx.at

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Reply

Sir:

I would like to thank Drs. Dabernig, Watson, and Hart for their comments on our article. I certainly appreciate and am willing to adopt simpler ways to thin the flap primarily. However, as we did not want to take risks that might lead to compromise of the flap's circulation, we developed this thinning technique. Once we accumulate enough experience, we may modify this technique.

While I congratulate their success and agree with most of the points raised by Drs. Dabernig, Watson, and Hart, I strongly believe that loupes and the microscope make dissection of the small branches of the perforators safer and easier.

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Fu-Chan Wei, M.D.
Department of Plastic Surgery
Chang Gung Memorial Hospital
199 Tung Hwa North Road
Taipei 105, Taiwan
fcw2007@adm.cgmh.org.tw
jill3355@adm.cgmh.org.tw

Is There Any Need to Localize the Perforator of the Anterolateral Thigh Flap?

Sir:

We read with interest the article entitled "Efficacy of the Handheld Doppler in Preoperative Identification of the Cutaneous Perforators in the Anterolateral Thigh Flap" by Yu and Youssef.[1] The perforator-based free anterolateral thigh flap has become the workhorse of reconstruction, the uncertainty of perforator localization notwithstanding. Although many methods, including selective angiography to handheld color Doppler ultrasonography, have been suggested,[2–6] the final word about their utility is still elusive. The efficacy of handheld Doppler imaging, which provides a "semiquantitative" evaluation, has been reported differently by different authors in their series. Color Doppler has a high sensitivity and specificity but involves expertise and cost and is time-consuming. The big question is, "How important is this preoperative localization?" A review of the literature clearly shows that the position of the perforator is more or less constant. In 92 percent of cases, the perforator is located within a circle of 3-cm radius drawn around the midpoint of the line joining the anterosuperior iliac spine and the superolateral border of the patella, and nearly all perforators will lie in a circle of 5-cm radius drawn around the same aforementioned point.[2–5] Yu and Youssef agree with this and have designated the ABC system based on this principle. The authors also report that in 20 cases with no preoperative localization there was no flap failure.

One would agree that the anterolateral thigh flap is utilized mainly for defects larger than 10 × 10 cm. A skin island of this dimension will undoubtedly have the perforator included if the ABC system described by the authors is followed. It is obvious, therefore, that routine mapping of the perforator with any device is not required. However, we may need to localize the perforator preoperatively in the following situations:

1. When a flap less than 10 × 10 cm is needed.
2. When a thin or an adiposofascial anterolateral thigh flap is needed.
3. When a chimeric anterolateral thigh flap is designed such that the position of skin paddle is prefixed.

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Ramesh Kumar Sharma, M.Ch.(Plast.Surg.)

Puneet Tuli, M.Ch.(Plast.Surg.)
Department of Plastic Surgery
Postgraduate Institute of Medical Education and Research
Chandigarh, India

Correspondence to Dr. Sharma
Department of Plastic Surgery
Postgraduate Institute of Medical Education and Research
Sector 12
Chandigarh, Pin 160012, India
drsharmark@yahoo.com

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Reply

Sir:

In our article titled "Efficacy of the Handheld Doppler in Preoperative Identification of the Cutaneous Perforators in the Anterolateral Thigh Flap,"[1] my coauthor and I concluded that the handheld Doppler devices were not very accurate in localizing the cutaneous perforators in an American population and that the anterolateral thigh flap could be raised safely based on the "ABC" system without preoperative Doppler examination. Since that study, I have performed another 100 anterolateral thigh free flap procedures successfully without preoperative Doppler examination and feel very comfortable with the flap. Drs. Sharma and Tuli seem to agree with this in their letter and suggest that preoperative localization may be needed in the following three circumstances: a flap less than 10 × 10 cm, a thin or adipofascial flap, and a multi-island (chimeric) anterolateral thigh flap.

A flap less than 10 × 10 cm. The overwhelming majority of anterolateral thigh flap procedures I have performed, including the ones in the study, involved flaps that were less than 10 cm wide (usually between 6 and 9.5 cm). The length of the flap is less important, since a longer incision toward the groin will be needed to dissect out the main vascular pedicle (unless the perforator itself is used as the main pedicle) and the dog-ear will need to be removed to facilitate primary closure. If I have to suggest a cutoff for the flap width when preoperative Doppler localization is needed, I would say it is 6 cm. I usually position the anterior (medial) incision 1 or 2 cm medial to the anteroposterior line depending on the width of the flap needed and explore the cutaneous perforators first before making the posterior incision. I should have a 97 percent or higher success rate this way, since 97 percent of the perforators are located lateral to the anteroposterior line. For example, if the perforator is located 3 cm lateral to the anteroposterior line (an extreme case) and the anterior incision is 1 cm medial to the anteroposterior line, I can still safely raise a 5-cm-wide flap with the posterior incision 1 cm outside the perforator, which is safe for a small flap. To be safer, one can make a 6-cm-wide flap (with the posterior incision 2 cm outside the perforator) and trim the anterior edge of the flap to the desired size. Primary closure should be possible for a 6-cm-wide defect. I always place a 5-0 Prolene suture on the skin where the actual perforator is located so that I know exactly where to trim during flap insetting. An ink mark may disappear easily. I would not make the anterior incision lateral to the anteroposterior line even if I have a good Doppler signal, because it may not be accurate. Making an incision medial to the anteroposterior line, as mentioned above, is much safer and has nothing to lose. That way, I really do not need preoperative localization. However, the accuracy of Doppler examination increases with the decrease in body mass index and the thickness of the anterolateral flap. The flap thickness in my series doubles that of an Asian population.[2] Therefore, Doppler examination may be much more accurate in Asian patients with a thin thigh, where a freestyle free flap can easily be designed. Also beginners might feel more comfortable getting a Doppler signal preoperatively before raising the flap.

A thin or an adipofascial flap. I think the authors meant a "thinned" flap. When flap thinning is required, it is crucial to know the exact location of the cutaneous perforators. Unfortunately, preoperative localization is even less accurate in a thick thigh. Therefore, I would not trust the Doppler in planning a flap thinning. Using the aforementioned method (placing the anterior incision medial to the anteroposterior line) to surgically locate the perforators is a safer approach, in my opinion. If only an adipofascial flap is needed, it is unnecessary to preoperatively locate the perforators since no skin is taken. I use the same approach to identify the perforators and then dissect the adipofascial tissue off the skin starting medially.

A chimeric (multi-island) flap. Use of a chimeric flap really depends on the accuracy of the localization method. If you feel confident about the preoperative localization, you can design the flap accordingly. Since I have not found a reliable and practical way to locate

the perforators preoperatively in our patient population, I rely more on surgical exploration, as mentioned above. Once the perforators are directly visualized, you can design multi-islands in a free style to meet your needs. I would try to be more flexible in flap design (not "prefixed") and be prepared for any possible variations.
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Peirong Yu, M.D.
Department of Plastic Surgery
University of Texas M. D. Anderson Cancer Center
1400 Holcombe Boulevard, FC8.2000
Houston, Texas 77030
peirongyu@mdanderson.org

REFERENCES

1. Yu, P., and Youssef, A. Efficacy of the handheld Doppler in preoperative identification of the cutaneous perforators in the anterolateral thigh flap. *Plast. Reconstr. Surg.* 118: 928, 2006.
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Full-Thickness Skin Graft as a One-Stage Debulking Procedure after Free Flap Reconstruction for the Lower Leg

Sir:

We read with interest the article entitled "Full-Thickness Skin Graft as a One-Stage Debulking Procedure after Free Flap Reconstruction for the Lower Leg," by Lin and Jeng.[1] The authors have suggested that all of the skin should be taken off and then re-applied as a full-thickness skin graft. We have been thinning these flaps by raising the skin flap at the subdermal level as with a full-thickness skin graft, but maintaining the flap attachment along one suture line so as to make it a "pedicled full-thickness skin graft." This technique allows the desired contouring and also helps maintain the blood supply to the superthin "pedicled full-thickness skin graft flap" through the attached edge, thereby improving the survival/take of the "flap." Second, this permits better draping of the skin as the attached end provides a fixed reference point. Third, flap thinning is much easier as the attached edge acts like a hinge and the raised "flap" can be spread over a sponge.

The authors have also suggested that the second operation (i.e., thinning) can be done even at an early point in time [two cases at 1 month, three cases at 2 months, and eight cases at 3 months (Table 1 in article)]. We also believe that a waiting period of about 3 months before flap thinning is worthwhile, as massage during this period significantly decreases edema and the flap becomes supple.

Finally, the authors' apprehension regarding another operation after liposuction of the flap for excision of redundant skin seems to be an undue concern. We think that excision of the redundant skin can be combined with the primary liposuction procedure, and this has also been reported in literature.[2]
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Ramesh Kumar Sharma, M.Ch.(Plast.Surg.)
Puneet Tuli, M.Ch.(Plast.Surg.)
Surinder Singh Makkar, M.Ch.(Plast.Surg.)
Department of Plastic Surgery
Postgraduate Institute of Medical Education and Research
Chandigarh India

Correspondence to Dr. Sharma
Department of Plastic Surgery
Postgraduate Institute of Medical Education and Research
Chandigarh, Pin 160012, India
drsharmark@yahoo.com

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Reply

Sir:

We acknowledge Sharma et al.'s procedure of flap debulking, as well as their comments regarding our published article, "Full-Thickness Skin Graft as a One-Stage Debulking Procedure after Free Flap Reconstruction for the Lower Leg" (*Plast. Reconstr. Surg.* 118: 408, 2006). We think Sharma et al.'s debulking procedure as described is similar to the conventional method with a more aggressive intent in thinning the flaps. Although maintaining the thinned skin flap along one suture line makes the flap easier to handle, because the attached edge acts like a hinge, this procedure is dangerous for the flap's distal circulation, where manipulation may lead to flap necrosis, especially in larger skin flaps. A true full-thickness skin graft following a flap debulking procedure makes reshaping and contouring of the flap easier in the ankle and foot areas, because these are three-dimensional structures.

A longer waiting period before a debulking procedure is not a prerequisite in our method. The main blood supply to the full-thickness skin graft comes from the fascia layer and not from the wound edges.

Liposuction as a debulking procedure may be helpful in other areas, but it cannot provide a very thin skin envelope for the ankle and foot. Although the redundant skin after liposuction can be partially removed during the same primary liposuction procedure, the circumferential scar should be revised in another procedure.
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Tsan-Shiun Lin, M.D.

Seng-Feng Jeng, M.D.
Department of Plastic and Reconstructive Surgery
Chang Gung Memorial Hospital
Kaohsiung Medical Center
Chang Gung University College of Medicine

Correspondence to Dr. Lin
Department of Plastic and Reconstructive Surgery
Chang Gung Memorial Hospital at Kaohsiung
123 Ta-Pei Road, Niao-Sung Hsiang
Kaohsiung Hsien 833, Taiwan
tslin51@yahoo.com.tw

Effects of Hyperbaric Oxygen on Peripheral Nerves

Sir:

The main purpose of the study "Effects of Hyperbaric Oxygen on Peripheral Nerves" (*Plast. Reconstr. Surg.* 118: 350, 2006) was to describe the effects of hyperbaric oxygen on nerves. Therefore, neurophysiologic, histopathologic, and automated morphometry outcomes were the most important factors.

As Dr. Janis properly noted in his Discussion (*Plast. Reconstr. Surg.* 118: 358, 2006), hyperbaric oxygen has a conclusive effect on angiogenesis in the postinjury period, all in accordance with the title of the study. However, it was a teleological argument that motivated my coauthors and me to show the content of Table 2, which described a consistent improvement (data not shown in the article) in animals treated with hyperbaric oxygen on peripheral nerves at weeks 7 and 14.

To facilitate understanding for the readers, our findings showed only this aspect when comparing treated and nontreated animals. So it was then clear that there was a clinically significant difference in favor of those that had hyperbaric oxygen treatment. We want to facilitate this point more, so we show here Figure 1 with row data.

Although foot ankle angles are not a reliable measure, it is well known that functional recovery is easily assessed in humans; in animals, however, it has been difficult to measure. Evaluation of sensory function is usually indirect. For this reason, recovery of motor function is a better criterion, even though motor function returns more slowly than sensory function does.[1]

Although we did use the sciatic functional index in some animals, we believe that electromyography and motor latencies are better parameters for measuring peripheral nerve damage than the sciatic functional index.

I would also like to mention that we used the noninjured leg as an internal control, even though we never mentioned this explicitly in the article.

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Raquel O. Eguiluz, M.D.
Consultorio 201
Hospital Angeles del Pedregal
Camino a. Sta. Teresa 1055
Col. Héroes de Padierna
CP 1700 Mexico D.F.
Delegación Magdalena Contreras
Mexico City 1700, Mexico
floregui@yahoo.com.mx

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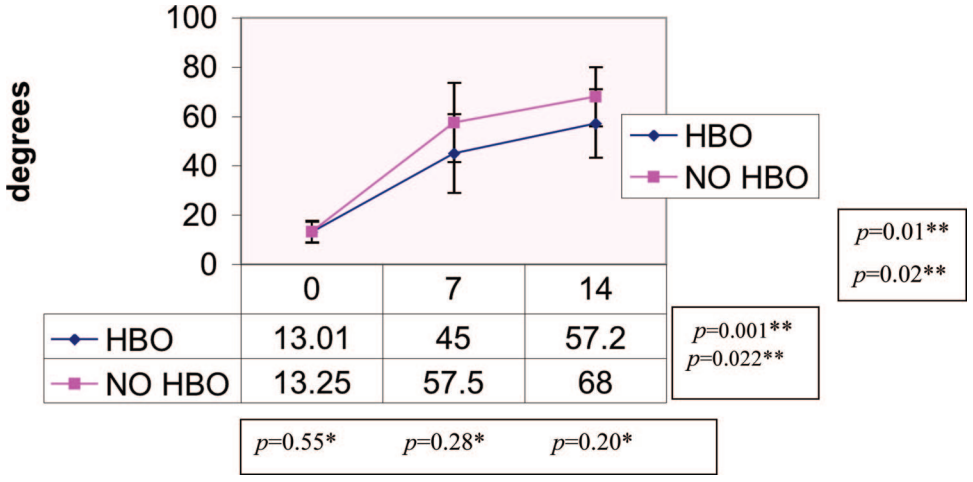

Fig. 1. Changes in foot-ankle angles. In the time between nonoperated (week 0) versus operated (week 7 and week 14), there were statistically significant differences among the 3 weeks (**Friedman test). However, there were no statistically significant differences between each time point when hyperbaric oxygen versus no hyperbaric oxygen treated groups were compared (*U–Mann-Whitney test). HBO, hyperbaric oxygen treatment.

Update on Office-Based Surgery Regulations in New York State

Sir:

After reading "Office Surgery Safety: The Myths and Truths behind the Florida Moratoria—Six Years of Florida Data," by Clayman and Seagle[1] and the Discussion by Guy[2] in the September 1, 2006, issue of the *Journal*, I felt that the *Journal*'s readers should know about New York's progress toward regulation of office-based surgery.

In the fall of 2005, the commissioner of health, Antonia C. Novello, M.D., M.P.H., Dr.P.H., reconvened the Committee on Quality Assurance in Office-Based Surgery. The committee was reconstituted with additional members, because the number of office-based surgery procedures had increased and New York State had experienced several high-profile cases of medical misconduct in the office-based surgical setting in the previous few years, raising increasing concern for public safety. The committee was originally set up in late 1997 under the auspices of the New York State Public Health Council. It was composed of individuals representing various specialties, including anesthesiology, internal medicine, ophthalmology, general surgery, orthopedics, and dentistry, and professional organizations and consumers. The committee developed clinical guidelines that physicians, dentists, and podiatrists could use in establishing and operating office-based surgery practices. The guidelines were finalized in December of 2000 and included recommendations for the environment of care and safe provision of anesthesia services by trained and qualified personnel. The guidelines also included recommendations for the hiring and privileging of staff, office procedures, medical record keeping, infection control techniques, informed consent, and the maintenance of equipment and operating rooms. These guidelines can be found at http://www.health.state.ny.us/nysdoh/obs/toc.htm.

Distribution of the guidelines was suspended in 2001 due to a legal challenge by the New York State Association of Nurse Anesthetists. During this time, the Department of Health was enjoined from publishing and distributing the guidelines. In March of 2004, the New York Court of Appeals ruled in favor of the New York State Department of Health and the department reissued the guidelines.

At the first meeting of the reconstituted committee on October 11, 2005, Commissioner Novello outlined several areas for which she requested recommendations be developed:

1. Identify and track adverse events in the office-based setting;
2. Review what additional data are required to discover, evaluate, and prevent adverse events, such as transfer to the emergency department of patients following office-based surgical care;
3. Study the potential risks and complications associated with multiple surgical procedures being performed on a single patient during the same day; and
4. Make any additional recommendations the committee deems necessary to improve the quality of care in office-based surgical practices, including recommendations to increase consumer awareness in this area.[3]

This updated committee added two practicing plastic surgeons besides myself as members, as well as a dermatologist. There were many meetings, much heated discussion, and reports from all three nationally accredited certifying agencies—the Accreditation Association for Ambulatory Health Care, the Joint Commission on Accreditation of Healthcare Organizations, and the American Association for Accreditation of Ambulatory Surgery Facilities, Inc.—as well as reports from representatives of both Florida and California regarding their office-based surgery issues. In addition, there were comments from such groups as the American College of Surgeons and the Medical Liability Mutual Insurance Company (the major malpractice carrier in New York). After these presentations, the committee reached consensus and presented a final report to the Public Health Council at their meeting in July of 2006.

The report contained the following suggestions and legislative wording to accomplish the following:

- Physicians operating in office-based surgery settings where anything other than local anesthesia is used need to have their facility certified by a Department of Health–approved, nationally accredited certifying agency. At the moment, the American Association for Accreditation of Ambulatory Surgery Facilities, Inc., Accreditation Association for Ambulatory Health Care, and Joint Commission on Accreditation of Healthcare Organizations are all approved certifying agencies.
- Surgery under local anesthesia only and liposuction, only if the total volume is less than 500 cc, can be done in a nonaccredited facility.
- Adverse events (deaths, hospital transfers and admissions, and other serious occurrences) need to be reported directly to the Department of Health.
- Physicians performing surgery in an office setting need to have hospital privileges in the specialty practiced in the office-based surgery setting. The procedures the physician performs should be ones generally recognized by the American Board of Medical Specialties or its American Osteopathic Association counterpart as falling within the scope of practice of the physician providing the care.
- Physicians performing office-based surgery should be board certified by the American Board of Medical Specialties or the American Osteopathic Association counterpart.
- Physicians performing office-based surgery need to have a transfer agreement with a hospital or another physician with admitting privileges at a nearby hospital.
- When performing multiple procedures, guidelines and/or recommendations from the appropriate specialty/subspecialty should be followed.

The teeth in these changes will be the enactment of the regulations by the state legislature. The wording has been set and we are awaiting enactment of these regulations. Here, it will be a violation of the public health law not to follow the above changes and the physician's license can be summarily suspended. For plastic surgeons who are members of the American Society of Plastic Surgeons or the American Society for Aesthetic Plastic Surgery, these regulations should not pose a problem; however, for many of our physician colleagues, these regulations will require them to have their surgical facilities approved.

The committee did an excellent job of simplifying rules for office-based surgery that are meant to help ensure patient safety without overburdening the physician with duplicative rules. Competent, caring doctors should have no problem following the rules. Will this help the public? I hope so; however, we need to educate patients so that when they come in for a consultation and ask "How much does it cost," they should also ask, "Will this be done in an accredited facility." We are currently awaiting the final enactment of legislation to bring this work to fruition.

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William B. Rosenblatt, M.D.
Lenox Hill Plastic Surgery Center
308 East 79th Street
New York, N.Y. 10021
wbrosenblattmd@verizon.net

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Reply

Sir:

Dr. Rosenblatt should be congratulated for bringing to light what is currently happening in New York State in the realm of office surgery. His letter is well received, and gives us the opportunity to provide an even deeper understanding of how important patient safety, medical error reduction, and patient education are within the office surgery setting.

Although there has been considerable media controversy over the years regarding reports of decreased patient safety and errors that have occurred in the office surgery setting, the majority of data across various specialties demonstrate a very low incidence of adverse events resulting from office-based surgery. The regulatory changes stated within Dr. Rosenblatt's letter appear to have simplified the rules for office-based surgery in his state, but there are still some deficiencies that may hinder patient safety.

I agree with the majority of the regulations noted in the letter, but we should look closer at certain situations. For instance, allowing surgery under local anesthesia with the use of oral sedation and/or the removal of less than 500 cc of lipoaspirate in a nonaccredited facility will allow physicians and nonphysicians to perform procedures outside the scope of their training. Not regulating this aspect of office procedures puts patient safety at risk when procedures are performed by a physician who advertises certain procedures and claims to be trained by a non—Accreditation Council for Graduate Medical Education–approved cosmetic or aesthetic board. The uneducated or uninformed patient might undergo surgery performed by a physician with no surgical training whatsoever or by someone who is trained only to operate on one aspect of a patient's body and is only familiar with taking care of complications located to that specific area.

Also, if the Department of Health is to allow physicians to perform procedures only within their scope of training and make it necessary for the doctor to have hospital privileges in the same specialty practiced within the office setting, the question remains of what the Department of Health does when a dentist, oral surgeon, family practitioner, endocrinologist, or other practitioner performs surgery of the breast, body contouring, or other procedures outside their scope of training in an accredited facility? In the state of Florida, all procedures performed in an accredited office facility are reported to the board of medicine. This allows the state to identify which surgeons are performing which type of procedures, but it does not regulate them to the scope of training of the physician at this time. For example, oral surgeons in the state of Florida are performing transumbilical breast augmentation and abdominoplasty without regulation at this time, but it remains unclear as to whether or not sedation under dental accreditation is regulated in a similar fashion or whether some other loophole exists. It also remains unclear whether the decision in California, allowing the American Board of Cosmetic Surgery to be considered equivalent to boards approved by the Accreditation Council for Graduate Medical Education, will change the decisions of hospitals in the future, allowing privileges based on this non—Accreditation Council for Graduate Medical Education–approved board. Will this take effect in other states?

What we do know is that we must continue to create a culture of patient safety in our specialty, with patient education and surgeon vigilance. The ultimate judgment regarding the care of a patient lies with the physician. Physicians must consider the risk factors associated with certain procedures, such as patient selection, length of the procedure, comorbidities, deep vein thrombosis prophylaxis, and so on, when deciding whether such procedures should be performed in an accredited office-based facility, outpatient surgery center, or hospital-based facility.

One of the remaining challenges is the need to continually improve this culture of safety by emphasizing the need for continued patient education specifically related to aesthetic procedures administered in non-

clinical settings by amateur, unlicensed, or unqualified practitioners with a misrepresentation of their credentials and training. This is a long-term proposition and one that has been driven foremost by our leaders in plastic surgery. Once again, Dr. Rosenblatt should be congratulated for bringing what is happening in New York State to our attention. It is hoped that others will do the same in their states.

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Mark A. Clayman, M.D.
Division of Plastic and Reconstructive Surgery
University of Florida College of Medicine
1600 SW Archer Road
P.O. Box 100286
Gainesville, Fla. 32610
mclayman@ufl.edu

Viewpoints

Pseudoaneurysm of the Frontal Branch of the Superficial Temporal Artery: An Unusual Complication after the Injection of Botox

Sir:

A pseudoaneurysm is a deformation of the arterial wall secondary to disruption by blunt or penetrating trauma. The rupture affects all three layers of the vascular wall, and over time, fibrous tissue develops that eventually resembles the arterial wall.[1] Pseudoaneurysms have many locations, but their most common sites are the radial and the common femoral arteries,[1] because more invasive procedures are performed in those vessels.

A 35-year-old man presented with a tender mass on the upper part of his right eyebrow 6 months after the injection of 30 units of Botox (Allergan, Inc., Irvine, Calif.) (Fig. 1). His medical history included self-medication with aspirin (100 mg daily), which he was using at the time of injection. After the procedure, a hematoma developed over the tail of the eyebrow; it was treated with local ice.

Results of the physical examination were normal except for the 2 × 4-cm pulseless forehead mass. Ecotomography revealed thrombi within the tumor, and color Doppler examination showed blood moving in the perivascular mass.

The patient was operated on with a diagnosis of vascular tumor. During the operation, a lesion was found as a dilation of the frontal terminal branch of the superficial temporal artery. It was resected between 4-0 nylon ligatures. Histopathologic analysis determined that the lesion was a "small vessel with internal elastic lamina and adjacent connective tissue proliferation, suggesting a break in the arterial wall and fibrous walls that resembled arterial structures" (Fig. 2).

As with any penetrating facial injury, Botox injections can damage vessels and produce a pseudoaneurysm.[2] The anterior branch of the superficial temporal artery is vulnerable, because in the lateral forehead it courses over the frontal osseous ridge in the galea aponeurotica.

Diagnosis is clinical due to vascular signs, which were absent in our patient because of thrombosis.[3] Duplex sonography has a diagnostic accuracy of 95 percent. The characteristic "to-and-fro" waveform is detected between the perivascular collection and the vessel. The "to" component is due to blood entering the pseudoaneurysm during systole, and "fro" shows return of blood into the artery during diastole. Three-dimensional computed tomography, angiography, and angiomagnetic resonance imaging are newer diagnostic tools.[4]

Therapeutic options include surgical resection, ligation, sclerosis, ultrasound-guided thrombin injection, and coil embolization. Studies show that nearly 89 percent of untreated pseudoaneurysms resolve in 5 to 90 days, but no duplex criteria have proven predictive of spontaneous resolution. Large or expanding pseudoa-

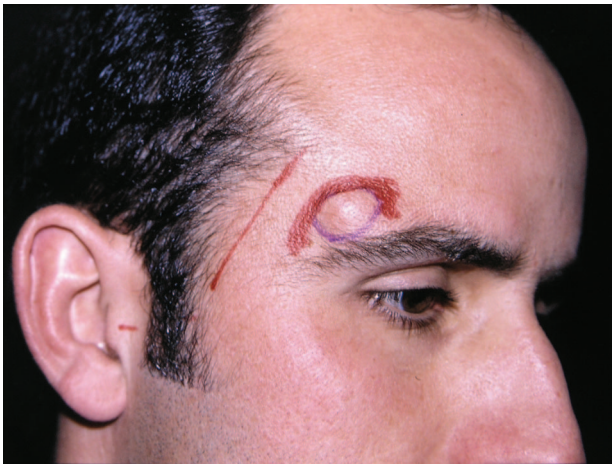

Fig. 1. Lateral view of the tumor. The trajectory of the frontal branch of the facial nerve is marked, as is the arterial frontal branch of the superficial temporal vessels.

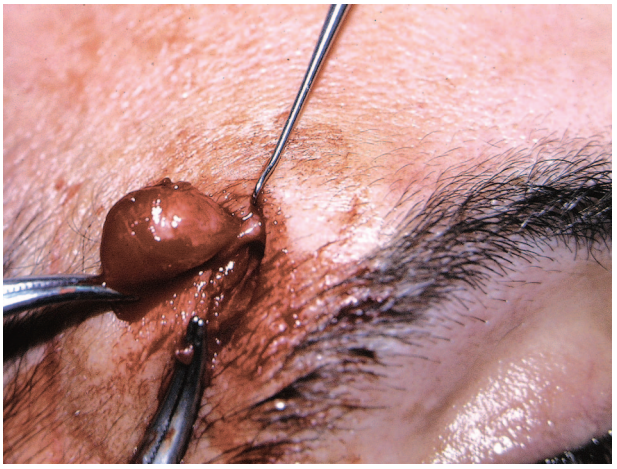

Fig. 2. Proximal section of the artery: The position of the connecting arterial tract, or "neck," was identified and measured before it was ligated with 4-0 nylon.

neurysms should be treated quickly; for symptomatic pseudoaneurysms, duplex-guided compression therapy and thrombin injections are useful.[5]

In this communication, we describe a rare complication after Botox injection: a pseudoaneurysm of the frontal branch of the superficial temporal artery. A pseudoaneurysm is a disruption of all three arterial walls of the vessel, usually caused by penetrating trauma. It is diagnosed clinically and with ultrasound color duplex sonography. We chose surgery from among other methods of treatment.

The final question is whether chemodenervation with Botox can affect the nonstriated fibers of the arteries, thereby contributing to the genesis of pseudoaneurysms.

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Arturo Prado, M.D.
Patricio Fuentes, M.D.
Claudio Guerra, M.D.
Patricio Leniz, M.D., Ph.D.
Pamela Wisnia, M.D.
Division of Plastic Surgery
School of Medicine
Clinical Hospital J. J. Aguirre
University of Chile and University Diego Portales
Santiago, Chile

Correspondence to Dr. Prado
Manquehue Norte 1707, Suite 210
Las Condes
Santiago, Chile
pradoplast@yahoo.com

DISCLOSURE

The authors have no financial involvement with the manufacturers of Botox (Allergan, Inc., Irvine, Calif.).

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Functional Lower Lip Reconstruction with a Modification in McGregor Flap Technique

Sir:

The upper and lower lips constitute the oral aperture. For normal functions, such as speaking, whistling, drinking, eating, expressing moods, and kissing, both the upper and lower lips have to be intact, because they act as partners and counterparts in various movements. Lip defects may be due to acquired problems, such as trauma, infectious disease, and vasculitis, or to congenital nevi, hemangiomas, or clefts. However, most cases requiring reconstruction result from tumor ablation.[1]

Major defects of the lower lip have been repaired in many ways, including with the use of flaps from the chin, cheek, or upper lip. Some methods require incisions through nerves supplying the orbicularis oris and the flaps used for the lower lip reconstruction.[2] In this communication, I present a minor modification of the McGregor flap technique, in which the orbicularis oris muscle is dissected in an attempt to improve motor innervation and provide adequate oral competence and labial functioning in expression and speaking. Motor function and innervation of the lips after reconstruction were documented by clinical findings.

A 71-year-old man presented with an 8-month history of multiple malign lesions in his lower lip. His physical examination showed three lesions in the lower lip, the largest of which was 1 × 1.5 cm (Fig. 1, *above*). The mass was removed as a quadrilateral segment, with its lower border at the labiomental groove and a 1-cm margin. The inferior incisions from the edges of the defect were made 4 mm from the alveobuccal sulcus, leaving a strip of anchoring tissue for subsequent advancing sutures and inner flap lining. On the flap side, the ends of the incisions were run laterally from the commissure level, for horizontal advancement, by drawing the skin at the upper edges of the labial defect together in the midline, such as in McGregor methods. A straight line from the commissures was drawn laterally from the labiomental groove on the other commissure. Then, a semicircular incision was made from the edge of the other commissure. Both flaps were sutured in the midline. This technique differs from the McGregor method in that one flap is not sufficient for closure; with advancement, one side of the orbicularis oris muscle is exposed with its intermingling buccinator muscle laterally, the zygomaticus major and the levator anguli oris superolaterally, and the depressor anguli oris muscle inferomedially.[3,4] The patient healed uneventfully after the operation. His oral competence was nearly normal and there was no drooling. At 1-year follow-up, the scars hidden in the facial grooves were well concealed and acceptable, for a satisfactory aesthetic outcome (Fig. 1, *below*).

In conclusion, for defects larger than one-third of the lower lip, several procedures, including distant and free flap reconstructions, have been used, with varying aesthetic and functional success. Distant and free flaps, which also involve with possible donor-site problems, are often bulky and have a bad color match. Furthermore, they lead to poor sensation and motor function.[5] I believe the McGregor technique, involving the advancement of two innervated cheek flaps, should be considered the first-line procedure for one-stage reconstruction of lower lip defects of 80 percent or greater. Because this technique pays attention to the facial grooves, the junctions of facial landmarks, the relationship between the lips and the chin

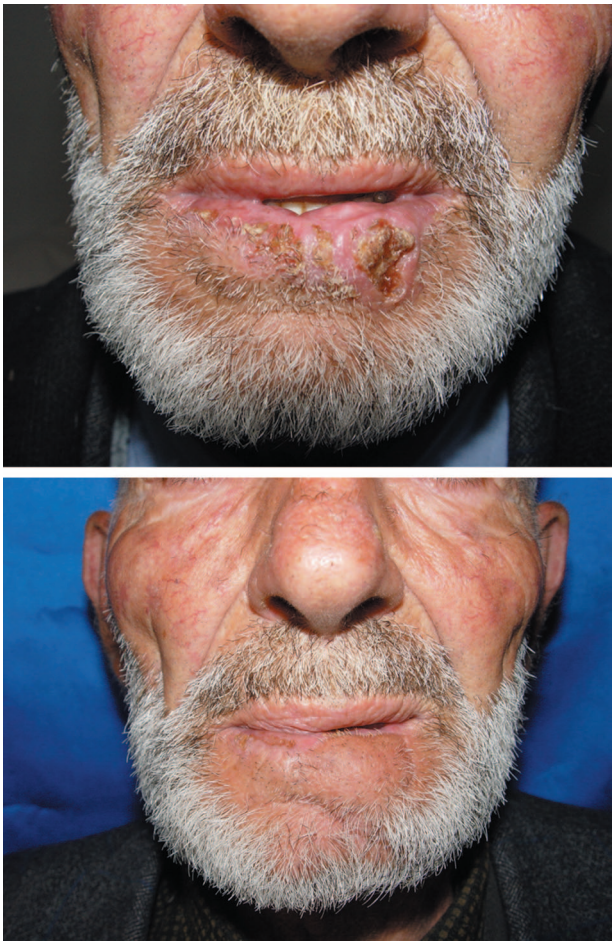

Fig. 1. (*Above*) Multiple squamous cell carcinomas in the lower lip. (*Below*) Late frontal view of the patient at 1 year showing sufficient oral aperture.

is aesthetic and the lower lip is sensate and functional. However, I believe there is no need to transect the orbicularis oris muscle, as described in the original McGregor procedure. A minor modification in muscle dissection can improve innervation of the orbicularis oris considerably, leading to improved lower lip function.

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Ilteris Murat Emsen, M.D.
Department of Plastic and Reconstructive Surgery
Ataturk University Medical Faculty
Erzurum, Turkey

Correspondence to Dr. Emsen
Ataturk Universitesi Lojmanlari
4. Blok, No. 30
25240 Erzurum, Turkey
ilterisemsen@hotmail.com

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Prepositioning a Closed Negative-Pressure Drainage Device in Head and Neck Reconstruction

Sir:

Although indispensable in head and neck reconstruction, free flap transfer poses problems for many surgeons because of its high complication rate.[1,2] Postoperative hematoma, seroma, and lymphorrhea all predispose the patient to infections. Closed negative-pressure drainage is generally used to prevent such collections, but optimal placement of a closed negative-pressure drainage device is difficult. At our hospital, we developed a prepositioning technique for drainage placement in head and neck reconstruction with a free flap transfer.

The procedure is quite simple. We usually use a closed negative-pressure drainage device with a sharp

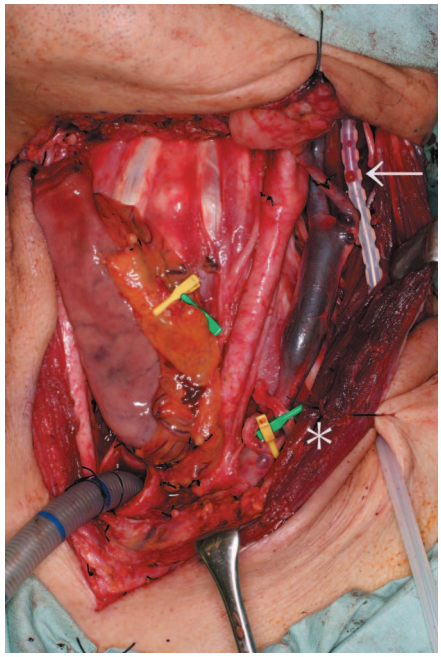

Fig. 1. Defect after cervical lymph node dissection and hypopharyngeal carcinoma. The closed negative-pressure drainage device was positioned deeply in the neck before microanastomosis (*arrow*). A free jejunal flap was transferred. The superficial cervical artery and vein were selected as recipient vessels (*).

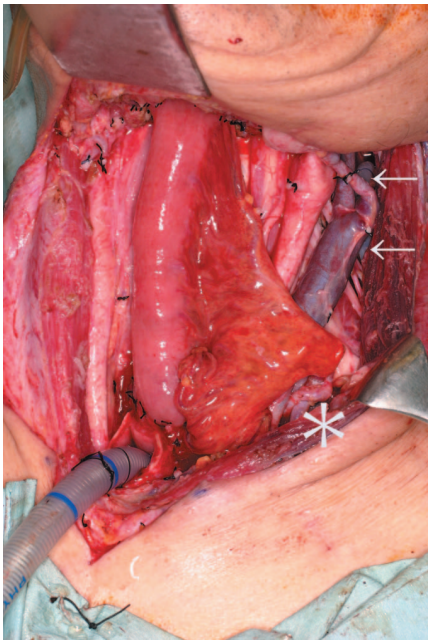

Fig. 2. Microanastomosis was performed after the closed negative-pressure drainage device had been positioned in a manner unlikely to injure anastomosed vessels (*arrow*). The *asterisk* indicates the location of the superficial cervical artery and vein.

needle for penetrating the skin. Unfortunately, forceful needle placement can easily injure vascular pedicles that have undergone delicate microanastomosis. Accordingly, after suturing the free flap to the defect as the first step, we position the closed negative-pressure drainage device before performing the microanastomosis (Figs. 1 and 2).

Modified radical neck dissection or selective neck dissection is currently performed with the aim of preserving neuromuscular and vascular function after treatment of cervical metastasis. In cases where the sternocleidomastoid muscle, internal jugular vein, and accessory nerve are preserved, the irregularly shaped defect remaining after neck dissection poses problems in positioning a closed negative-pressure device. Moreover, microanastomosed vessels often course across the closed negative-pressure drainage device. If the device is positioned in a deep cervical location before microanastomosis, injury to vascular pedicles is less likely, as is external obstruction of flow by tension at the site of microanastomosis. Although it is very simple, this prepositioning technique offers considerable benefit to patients and helps to avoid complications in head and neck reconstruction involving free flap transfers.

Our procedure thus facilitates effective placement of the closed negative-pressure drainage device without complications.

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Shunjiro Yagi, M.D.
Yuzuru Kamei, M.D., Ph.D.
Shuhei Torii, M.D., Ph.D.
Department of Plastic and Reconstructive Surgery
Nagoya University Graduate School of Medicine
Nagoya, Japan

Correspondence to Dr. Yagi
Department of Plastic and Reconstructive Surgery
Nagoya University Graduate School of Medicine
65 Turumai-cho, Showa-ku
Nagoya, Japan 466-8560
yagishun@med.nagoya-u.ac.jp

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Avoiding Donor-Site Complications with Bilateral DIEP Flaps in Patients with Subcostal Scars

Sir:

Lower abdominal skin and fat form the mainstay of free flap breast reconstructions in the form of transverse rectus abdominis musculocutaneous (TRAM) and deep inferior epigastric perforator (DIEP) flaps. Patients with subcostal scars have been shown to be at a significantly increased risk of donor-site breakdown, and many surgeons consider the presence of such scars a contraindication to the use of these flaps.[1] We present a simple and quick technique for minimizing the risk of donor-site breakdown in such a patient.

A 42-year-old woman presented to our department for delayed bilateral breast reconstruction following mastectomy for carcinoma. The patient had a large right subcostal scar from a previous open cholecystectomy.

Preoperatively, a standard transverse lower abdominal skin paddle was marked out and inferior epigastric perforating vessels were located with Doppler ultrasound. A large transverse right subcostal incision was noted, and a perforator was located between the scar and the superior margin of the flap.

At operation, bilateral DIEP flaps were raised with three perforating vessels each. The right supraumbilical perforator was identified and preserved, and flow within the vessel was confirmed by intraoperative Doppler ultrasound. Limited undermining of the abdominal skin was performed in the midline to carefully preserve the perforator. A liposuction cannula was used to bluntly dissect beyond this area as far as the costal margin (Fig. 1).

The flaps were inset, the vessels were anastomosed to the thoracodorsal vessels on the left and the internal mammary vessels on the right, and the donor site was closed. Postoperative recovery was uneventful, and the patient was discharged home 5 days after the operation. At outpatient review 10 days postoperatively, the flaps

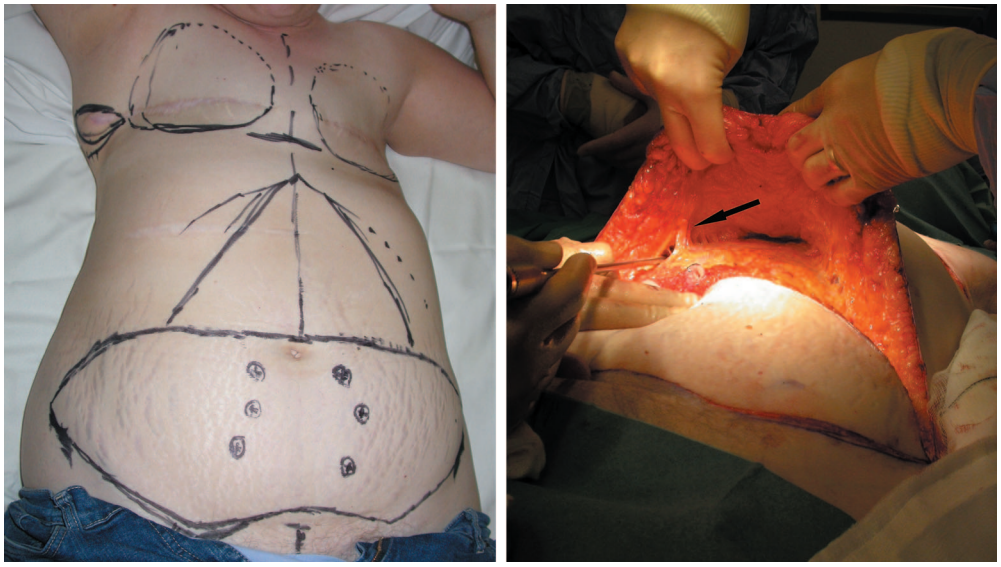

Fig. 1. Preoperative marking and intraoperative image (*arrow* indicates the perforator).

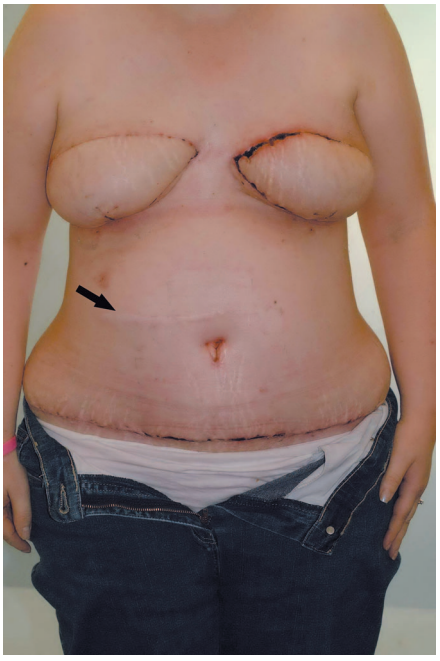

Fig. 2. Right subcostal scar (*arrow*) 1 week after reconstruction.

were both healthy and the donor site had healed with no necrosis or wound breakdown (Fig. 2).

Subcostal incisions have been found to be associated with up to an eight-fold increase in complication, such as abdominal skin loss and flap necrosis,[2,3] but other abdominal scar sites have not been found to significantly increase the risk of TRAM donor-site breakdown.[3]

Some authors recommend designing the flap in a more superior location to include part of the previous scar in the flap incision,[3] but this can prove difficult with high subcostal scars. Preservation of a perforating vessel on the contralateral side has recently been described with good results.[4] This entails dissecting out the perforators as for a DIEP flap; this is time-consuming and may preclude raising bilateral flaps.

We modified the procedure by limiting the degree of undermining of the abdominal skin and preserved an identified perforator that supplied skin below the subcostal scar. This allowed for safe harvest of bilateral DIEP flaps and added minimal extra operating time to the procedure.

The superior epigastric vessel may have been damaged during the original subcostal procedure, but in these cases, perforators may still be fed by subcostal and intercostal arteries. The blunt technique of abdominal skin undermining probably also serves to preserve other smaller vessels which further contribute to the skin flap vascular supply.

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Robert D. Bains, M.B.Ch.B

Paul R. Stanley

Muhammad Riaz

Department of Plastic and Reconstructive Surgery
Castle Hill Hospital
Hull, United Kingdom

Correspondence to Dr. Bains
Department of Plastic and Reconstructive Surgery
Castle Hill Hospital
Cottingham, Hull, United Kingdom
rdb6@doctors.net.uk

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Areola Reconstruction with Local Tissue

Sir:

Areola reconstruction has become a frequently performed procedure. Many surgical alternatives are now available. The ideal surgical technique should provide natural results with a low morbidity rate and low costs.[1,2] This study presents a simple and effective option for reconstructing the areola based on a circular local skin flap.

A prospective study was performed in 20 patients presenting for areola reconstruction between January of 2000 and December of 2004 at the Ivo Pitanguy Institute. We proposed a circular local skin flap with a central pedicle. Using an areolatome, a circle was marked in the position desired for the future areola. The circle margin was incised down to the dermis, and the skin was undermined superficially and centripetally for about 1 to 2 cm. This maneuver created a thin skin flap with a central pedicle of approximately 2 to 3 cm which was fixed in the former position (Fig. 1).

The surgical follow-up time was 8 ± 3 months. Two patients did not complete the follow-up and were excluded from the study. The average surgical time was 20 ± 9 minutes for each areola. The results were considered satisfactory by 16 patients (88.9 percent). Because of the superficial undermining of the flap, final texture and color tone simulated the contralateral areola. Only two patients (11.1 percent) required complementary dermopigmentation. No complications, such as dehiscence, necrosis, hematoma, or infection, occurred.

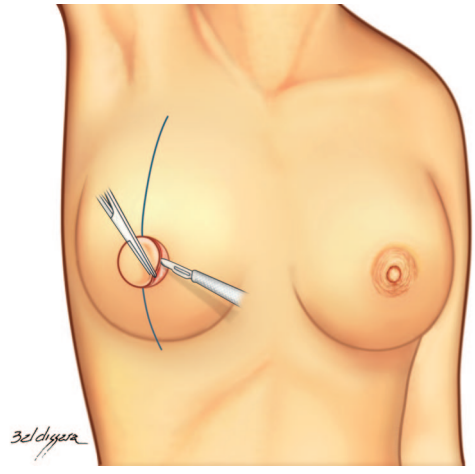

Fig. 1. After the position of the new areola is marked, flap borders are incised and a thin skin flap is undermined, maintaining its central pedicle.

Refinements in areola reconstruction are demanding. There is no consensus in the literature for the best choice.[3]

Full-thickness skin grafts are widely used. Depending on the color tone, the desired skin can be taken from the inguinal, perineal or retroauricular regions, the eyelid, or the contralateral areola. The results often do not adequately simulate a natural areola, and complications can occur. Moreover, removal of skin from another surgical site further increases the aggressiveness of the procedure.[4]

Some authors advocate a nonsurgical procedure, such as dermopigmentation.[3] This method is also criticized by some and is not widespread. The texture of the new areola is different from that of the contralateral one, and over time, gradual loss of pigmentation demands repeated procedures. For more natural results, an alternative is skin grafting with postoperative dermopigmentation.[3,4]

The circular flap, described here, is an alternative for cases in which the contralateral areola does not have sufficient donating skin or for cases of bilateral reconstruction. From several standpoints, it has surpassed other alternatives to areola reconstruction. The color of the new areola is similar to that of the contralateral one. The thin skin flap provides the local hemosiderin sedimentation, which darkens the flap, simulating the color of a natural areola.[5] Furthermore, due to the slight retraction of the flap, the tissue texture resembles that of a natural areola.

The simple method described here is a one-step surgical procedure for areola reconstruction with local tissue that provides satisfactory results, reduces costs, and minimizes complications. The local circular flap has proved to be an effective alternative for reconstructing a good-quality areola.

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Marcelo de Oliveira, M.D.
Daniel Nunes, M.D.
Mirta Beolchi, M.D.
André F. Vargas, M.D.
Ivo Pitanguy, M.D.
Department of Plastic Surgery
The Pontifical Catholic University of Rio de Janeiro
Carlos Chagas Institute of Postgraduate Medical Studies,
and
Ivo Pitanguy Institute
Rio de Janeiro, Brazil

Correspondence to Dr. de Oliveira
Rua Afrânio de Melo Franco, 141/311
Rio de Janeiro, Brazil, CEP 22430-060
dr.macelo.oliveira@hotmail.com

DISCLOSURE

The authors state that no financial support was given in the preparation of the communication and that there are no commercial associations that might create a

conflict of interest with any of the information presented in the communication. All authors are in agreement with the final version of the communication.

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Staged Upper Extremity Reconstruction with a Pedicled Parascapular Flap and Massive Bone Graft after a Devastating Airplane Propeller Accident

Sir:

The pedicled parascapular flap has been known to be a reliable source for soft-tissue coverage in the management of scar contractures in the axilla.[1,2] However, few authors have reported its use for soft-tissue reconstruction around the shoulder and upper arm.[3]

A 21-year-old man was hit in the left upper arm and shoulder by an airplane propeller. The result was a massive soft-tissue injury, including the nerves and shoulder girdle muscles, and a segmental comminuted fracture of the humerus.

The soft-tissue loss extended from the anterior aspect of the shoulder through the anterior aspect of the middle arm. After serial wound debridement and external fixation of the humerus, the proximal half of the humerus was skin grafted. Nine months after injury, the patient presented with an unstable pseudoarthrosis of the humerus with poor soft-tissue coverage. The proximal half of the humerus was quite palpable through the skin-grafted area, including the shoulder girdle and the pseudoarthrosis (Fig. 1, *left*). There was a 5-cm bone gap between the proximal and middle thirds of the humerus and only a fragile bone bridge connecting the middle and distal thirds. In addition, he had a complete deficit of the radial nerve below the elbow.

After appropriate tendon transfers for the radial nerve palsy, the patient became motivated to treat the pseudoarthrosis of the humerus. We decided to perform a pedicled parascapular flap before the bone procedure to provide more reliable soft-tissue coverage. The flap was elevated in the same way as it is in a free flap procedure. It was transposed to the anterior aspect of the humerus, between the teres major and teres minor (Fig. 1, *right*). Six months later, we performed the secondary bone procedure. A corticocancellous bone graft was harvested from the iliac crest to fill the bone defects, and a long LCP plate was used for fixa-

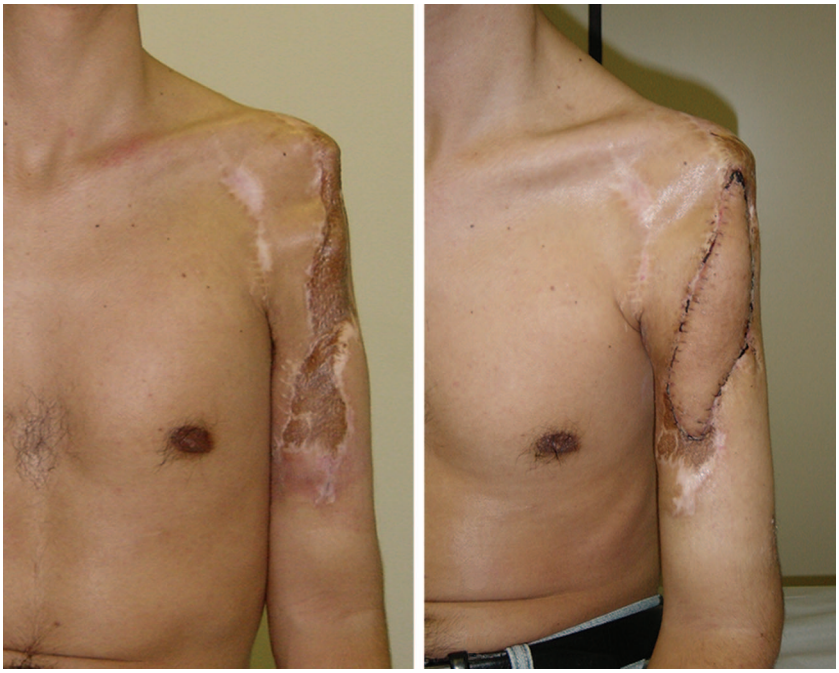

Fig. 1. (*Left*) Clinical view 9 months after the initial trauma. The proximal half of the humerus is covered only by a skin graft. (*Right*) Marked improvement of the shoulder and upper arm contour after flap inset.

tion. A custom-made thoracobrachial orthesis was used to protect the osteosynthesis for 3 months. Eight months after the bone grafting, radiographs showed solid consolidation of the pseudoarthrosis with bone graft integration.

Parascapular flaps as large as 30 × 15 cm have been raised with primary donor-site closure.[4] With these dimensions, the parascapular flap can reach the proximal and middle third of the upper arm, as much as the latissimus dorsi flap can.[5] We preserved the function of the latissimus dorsi muscle and did not have to harvest a skin graft to cover the muscular flap, thereby reducing donor-site morbidity. We find that it is much easier to deal with the secondary bone procedures in these cases when the soft-tissue defect has been covered with fasciocutaneous flaps instead of muscular flaps, because of the resulting muscle scarring around the bone defect.

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Alvaro Baik Cho, M.D.

Luís Eduardo Passarelli Tírico, M.D.

João Carlos Nakamoto, M.D.

Institute of Orthopaedics and Traumatology
University of São Paulo's Medical School
São Paulo, Brazil

Correspondence to Dr. Cho
Rua Batista Caetano, 93 apto 72
Aclimação
CEP 04108-130, São Paulo, Brazil
alvarocho73@hotmail.com

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Intersecting the Intersection: A Reliable Incision for the Treatment of de Quervain's and Second Dorsal Compartment Tenosynovitis

Sir:

Since de Quervain's classic description of tenosynovitis of the first dorsal compartment in 1895,[1] numerous publications have discussed the anatomy, diagnosis, clinical etiologies, pathophysiology, and medical and surgical treatment of this common disorder. These publications provide little detail or discussion about the implications of incision placement and the availability of different surgical approaches.

The first dorsal compartment is often affected by repetitive stress injuries, although many types of activities have been implicated.[2,3] Likewise, second dorsal compartment syndrome (intersection syndrome, peritendinitis crepitans) often occurs concurrently as a result of repetitive stress injuries.[4] These two syndromes may be difficult to differentiate from one another, and they can also be present simultaneously, along with other pathologies.[5] Although intersection syndrome is a well-recognized pathology, the surgical approach for its treatment has also been largely overlooked in the literature.

We present a reliable method for obtaining surgical exposure of the first dorsal compartment using well-defined anatomic landmarks. This method also provides excellent exposure to the second dorsal compartment, if needed.

As the hand rests on its ulnar side, with the first metacarpal and thumb in line with the radius, a line is drawn down the midshaft of the first metacarpal. This can be verified by visualizing the extensor pollicis brevis (which essentially runs down the midshaft of the metacarpal) with the thumb in extension. A second line is drawn transversely one fingerbreadth proximal to the base of the first metacarpal. At the intersection of this line with the transverse line, a line directed proximally and ulnarward at 30 to 45 degrees is drawn. Another longitudinal line drawn one fingerbreadth ulnar to and parallel to the midmetacarpal line represents the ulnar limit of the incision (Fig. 1). This gives excellent exposure to both compartments and the incision can be extended (this is rarely necessary).

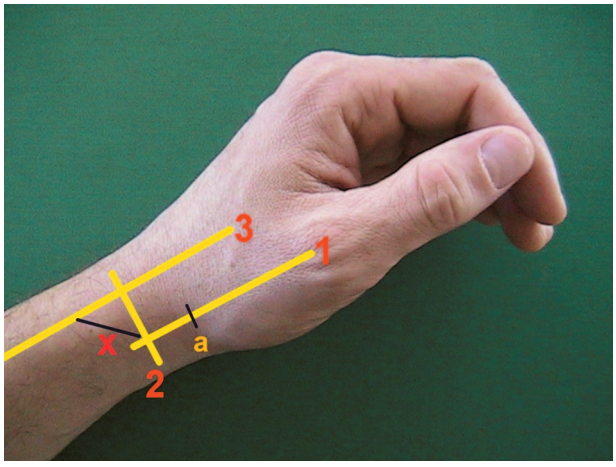

Fig. 1. The first line (*1*) represents the midline of the first metacarpal. At a point one fingerbreadth from the base of the first metacarpal (*a*), the second line (*2*) is drawn. The third line (*3*) is drawn one fingerbreadth ulnar and parallel to the first line (*1*), and it is at the intersection of lines *2* and *3* where the incision (*x*) is made at a 30- to 45-degree angle running ulnarward.

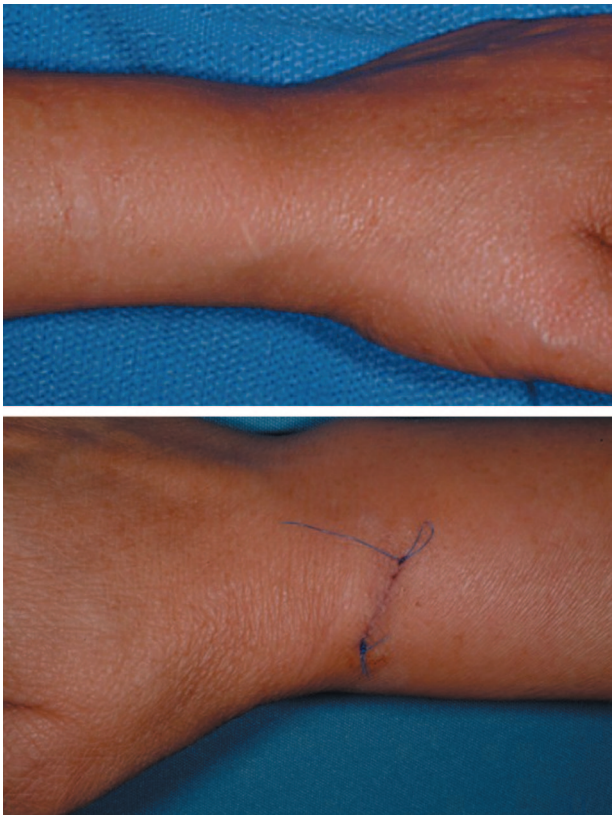

Fig. 2. (*Above*) Final scar 2 years postoperatively; (*below*) the scar 2 weeks postoperatively.

In addition to a small, cosmetically acceptable incision, which can be extended safely when necessary (Fig. 2), the advantages of this technique include more exposure along the full length of the compartment for a complete release, including the fascia of the abductor pollicis brevis if necessary, and freedom to inspect two potentially troublesome areas with one incision. In addition, with more direct access to these compartments, retraction is reduced, thereby minimizing possible injury to the superficial branch of the radial nerve.

Infrequent complications with this technique include those related to scar tenderness, scar depression, and adherence. We have seen no scar hypertrophy using this incision. Caution must be exercised with regard to the superficial branch of the radial nerve, because it is still subject to injury if meticulous technique is not employed. In summary, this incision, utilized by the senior author (G.H.D.) for the last 20 years with no serious complications, is a useful, reproducible, simple approach to the first and second dorsal compartments.

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Srdjan A. Ostric, M.D.
W. Jason Martin, M.D.
Gordon H. Derman, M.D.
Department of Plastic and Reconstructive Surgery
Rush University
Chicago, Ill.

Correspondence to Dr. Ostric
Department of Plastic and Reconstructive Surgery
Rush University
1743 West Harrison Street
Chicago, Ill. 60640
sa_ostric@sbcglobal.net

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Simple Irrigation Technique for Microvascular Surgery

Sir:

Irrigation with heparinized saline solution is one of the key features in microvascular surgery. It prevents thrombosis and keeps the lumen of the vessel open (especially for veins), thereby aiding in needle placement and anastomosis. In this communication, I present an easy way to handle the syringe that allows manipulation of the tip of the probe in multiple directions with minimal hand and wrist movement.

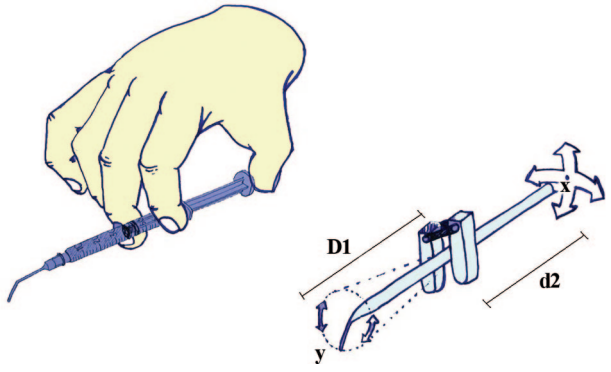

Fig. 1. In the conventional way of holding a syringe, movements are controlled between *x* (the thumb) and the fulcrum (the index and middle fingers).

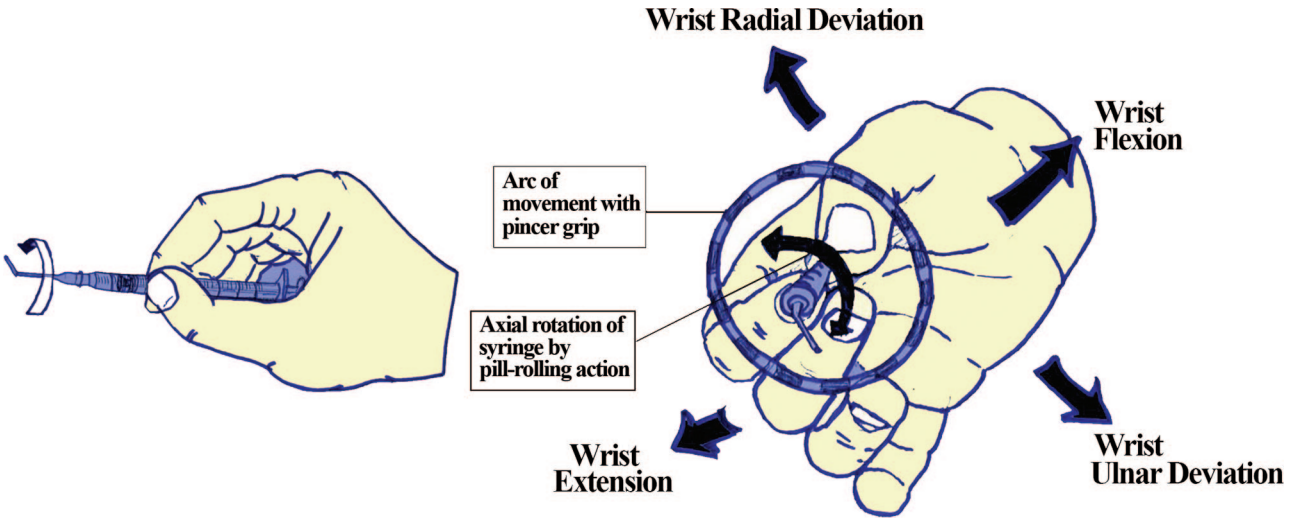

Fig. 2. The syringe is held between the thumb and index fingers (with or without the finger, as needed), and the plunger is placed against the palm. (*Left*) The rolling movement. (*Right*) The wrist has full range of motion, and the syringe can be rolled between the thumb and fingers.

In microvascular surgery, the smallest syringes and probes are used. I suggest an insulin syringe (1-ml capacity) or a 2-ml syringe and metal probe/cannula.

Normally, a syringe is held between the index and middle fingers, and the plunger is pushed with the thumb (Fig. 1, *left*). Manipulation of the syringe involves a lot of hand movement and can be awkward. Based on the simple physics law, in a fulcrum or pivot point (Fig. 1, *right*), when the distance d2 is smaller than D1, which is the case when the syringe is held in this conventional position, smaller movement at the "*x*" end will produce amplified/larger movement at the "*y*" end. Thus, if someone has a small tremor, a bigger tremor will be seen at the cannula tip, making syringe maneuvering a lot more difficult.

I suggest that the syringe be held between the thumb and index fingers (with or without the middle finger as needed) and the plunger be placed against the palm of the hand. In this position, the tip of the cannula can be easily manipulated through 180 degrees or more by rolling the body of the syringe between the thumb and the finger(s) (Fig. 2, *left*). In this position, the distant D1 is always smaller than d2; therefore, the law of physics has reversed to the former, and one's tremor will not be as obvious at the tip of cannula.

The syringe can also be manipulated in different directions, via wrist movement, and in a circular motion, using a pincer grip on top of the above-described rolling action (Fig. 2, *right*).

Overall, this position offers superior range of motion with minimal hand movement. It gives better control and reduces the effect of tremor compared with the conventional way of holding a syringe.

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Arman Z. Mat Saad, M.B., B.Ch., B.A.O.
Department of Plastic, Reconstructive, and Hand Surgery
University College Hospital
Galway, Ireland

Correspondence to Dr. Mat Saad
32 The Gazelle Village
Tyrrelstown
Dublin D15, Ireland
armanzaharil@yahoo.co.uk

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Analyses of Skin Waste during Excision of Benign Skin Lesions: Is the Surgical Ellipse Cut Necessary?

Sir:

All humans have benign skin lesions, some of which are removed during a person's lifespan.[1] The surgical ellipse, the most common cutting pattern, is typically used with a 3:1 length-to-width ratio and apices angle of 30 degrees. An excision designed in this manner offers fast healing, good aesthetic results, and primary closure without dog-ears.[2] This study quantifies the amount of healthy skin wasted in excising benign lesions.

The data from 90 consecutive biopsies of benign lesions performed in our outpatient clinic were recorded. The area of each lesion was calculated using the following formula:

$$A_{lesion} = \pi/4b \times d$$

where b is the short diameter and d is the long diameter of the ellipse.

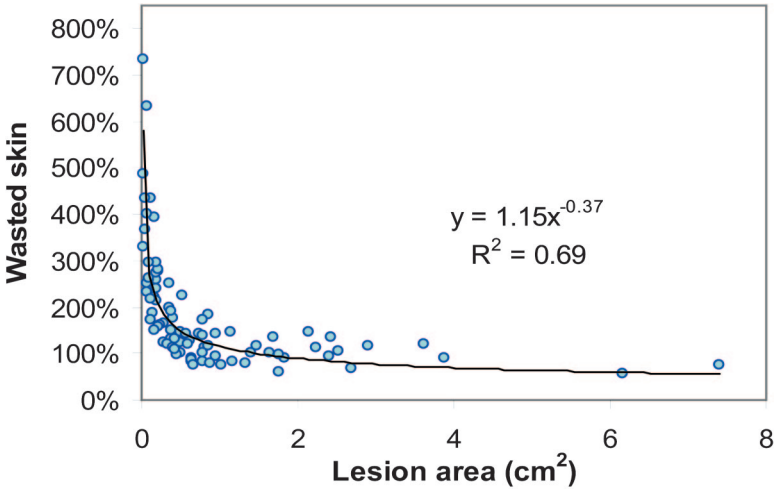

Fig. 1. Skin waste (percent) versus the lesion area (cm²). The amount of wasted skin decreases steadily with the size of the lesion area. The *solid line* is the best-fit curve of the data.

The area of the surgical ellipse was calculated as follows:

$$A_{ellipse} = \frac{S^2}{8}\left[\left(a^2+1\right)^2 \sin^{-1}\left(\frac{2a}{a^2+1}\right) - 2a\left(a^2-1\right)\right]$$

where S is the width of the fusiform ellipse and a is the length-to-width ratio.

Skin waste was defined as the ratio of the difference between the excised elliptical area and the original lesion area to the lesion area:

$$waste = \frac{A_{ellipse} - A_{lesion}}{A_{lesion}}$$

Lesion length varied between 2 mm and 32 mm; lesion width varied between 2 mm and 29.5 mm. The excision length varied between 6.5 mm and 54.5 mm, and the width varied between 3 mm and 33 mm. The mean aspect ratio of the excisions was 2.43:1. The area of the lesions varied between 3.14 mm² and 741 mm², and the area of the excised surgical ellipse varied between 13.54 mm² and 1283 mm². The skin waste was found in the range of 57 to 733 percent (mean, f=181 percent).

Figure 1 plots the skin waste versus the lesion area. The wasted skin decreases monotonously with the lesion area. Note that the skin waste is vastly larger for small lesions (733 percent for 3.14 mm²) than it is for large lesions (57 percent for 616 mm²). Thus, small lesions cause large skin waste whereas large lesions cause small waste.

The wasted area is typified by the following equation:

$$waste = 1.15A_{lesion}^{-0.37}$$

with $R^2 = 0.69$.

The average skin waste of the head and neck lesions was larger than that of the body lesions (240 percent, compared with 120 percent). Paradoxically, larger skin

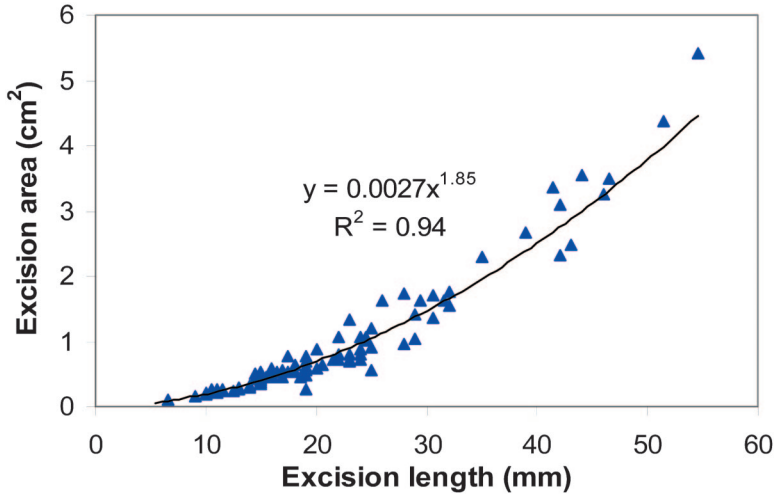

Fig. 2. Excision area versus lesion length. The solid line is the best-fit curve of the data.

waste was obtained for small lesions, because the excision margins for both sizes are similar.

The excision area is proportional to the excision length, as shown in Figure 2. A small addition to excision length dramatically affects skin waste. For instance, by increasing the average length from 20 mm to 30 mm, the excision area grows from 70 mm^2 to 142 mm^2.

This study quantified the skin wasted in excising benign cutaneous lesions as varying between 57 percent and 733 percent in excess of the lesion area. The smaller the lesion, the larger the skin waste.

The elliptical cut is, therefore, an unnecessary surgical procedure, especially for small benign lesions. Circular incisions obtain adequate margins and minimal skin waste and can be closed easily.[3–5]

We recommend a round block excision or a shave diagnostic biopsy of benign lesions.

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Tamara Raveh Tilleman, M.D., Ph.D.

Martino H. A. Neumann, M.D., Ph.D.

Michael M. Tilleman, Ph.D.

Department of Dermatology
Mohs Unit
Academisch Ziekenhuis
Rotterdam, The Netherlands

Presented for T. R. Tilleman's dissertation to Erasmus University, in Rotterdam, The Netherlands, July 1, 2004.

Correspondence to Dr. Tamara Raveh Tilleman
87 College Avenue
Arlington, Mass. 02474
trtilleman@gmail.com

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Wound Irrigation in the Emergency Room: A Simple, Effective Method

Sir:

Management of acute traumatic wounds is based on the sound principles of wound irrigation, debridement, and appropriate closure. Irrigation in the emergency room can be tedious, involving the use of complicated irrigation systems that are not readily available or repetitive syringe aspiration and hazardous needle irrigation. Nevertheless, the benefits of pressurized irrigation are well recognized. A simple, easy, and inexpensive way to perform effective irrigation is as follows: (1) choose a bottle of saline with appropriate volume for the wound in question, (2) pierce the top of the bottle with an 18-gauge needle (Fig. 1), and (3) squeeze the inverted bottle to provide a pressurized stream of saline (Fig. 2). The gauge of the needle as well as the number of holes made in the top of the saline bottle can be altered to suit the surgeon's needs. For very large wounds, a 1-liter bottle can be used with a blood

Fig. 1. Eighteen-gauge needle inserted into a 1-liter bottle of saline. Both the gauge and the number of holes can be altered depending on the wound and the surgeon's preference.

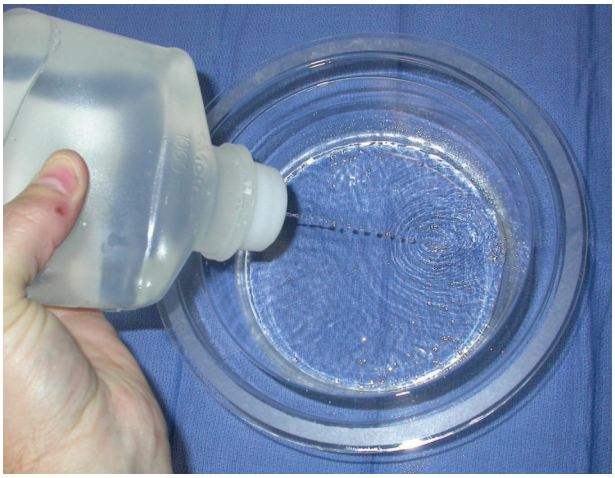

Fig. 2. The inverted bottle is squeezed to provide constant, pressurized irrigation using ubiquitous and inexpensive materials.

pressure cuff (another ubiquitous emergency room item) inflated around it to provide constant, pressurized irrigation. The lack of a protective shield allows for better visualization, but proper eye protection must be worn. This method has provided very effective irrigation using readily available and inexpensive materials.

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Eric G. Halvorson, M.D.
Division of Plastic Surgery
University of North Carolina
Chapel Hill, N.C. 27599-7195
eric_halvorson@med.unc.edu

Use of Hyaluronan Dressings following Dermabrasion Avoids Escharectomy and Facilitates Healing in Pediatric Burn Patients

Sir:

Deep partial-thickness burns are the most frequent type of burn in pediatric patients and pose difficult dilemmas for caregivers. First, the surgeon is expected to obtain good cosmetic results while at the same time avoiding hypertrophic healing processes. Second, indications and timing to early escharectomy are not as standardized as protocols for other lesions, because of the possible evolution of the burn into full-thickness and superficial burns. Third, if escharectomy is deemed necessary, the dermal plane must be respected and covered as soon as possible with skin grafts to prevent the hypertrophic healing process from occurring. For all of these reasons, deep partial-thickness burns seriously challenge the surgeon's abilities.

To solve these problems, since 2001, we have combined rotating-head dermabrasion with hyaluronan-based dressings. We previously described the positive results we obtained with dermabrasion, which prevented further necrosis and blocked the bad evolution of deep burns into full-thickness lesions.[1] Other authors have outlined the important wound-healing activity shown by hyaluronan-based matrixes on deep partial-thickness burns, in their ability to stimulate regeneration and avoid hypertrophy.[2] We have adopted the following protocol. Escharectomy and skin grafting are avoided, at least initially. All patients have their deep partial-thickness burns covered with silver antimicrobial dressings (Acticoat); superficial partial-thickness burns are covered with a transparent film of hyaluronic acid medication (Jaloskin) at recovery. On the fifth day, dermabrasion is performed on deeply burned areas to remove the superficial ischemic dermis and leave a mildly bloody surface. We cover these areas with a particular variant of hyaluronic matrix (Hyalomatrix PA), composed of silicone and hyaluronic acid, that has a slower degradation time. Serial medications are followed by hyaluronan matrix changes every 7 days. On day 21, those areas where deep partial-thickness burns persist with no sign of recovery are removed by escharectomy and covered with thin skin grafts.

Three hundred pediatric patients with deep partial-thickness burns were treated from February of 2001 to September of 2005 (78 percent of all patients). Sixty-one percent (183 patients) needed only one dermabrasion, 22.3 percent (67 patients) required more than one, and only 16.7 percent (50 patients) required classic escharectomy. Eighty-three percent of patients with deep partial-thickness burns (250 patients) avoided escharectomy and had their dermal plane shifted toward a superficial partial-thickness burn with spontaneous

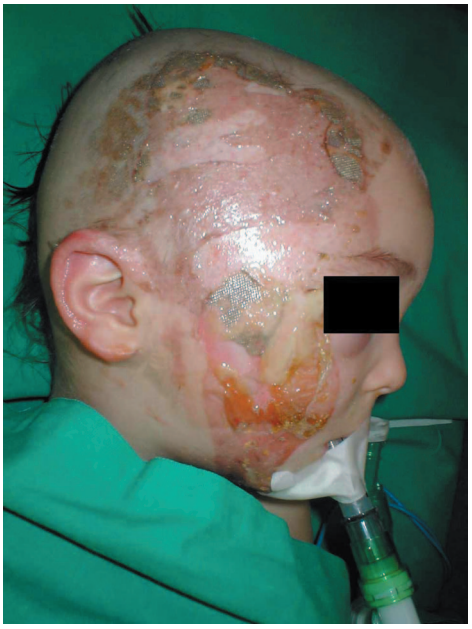

Fig. 1. Four-year-old patient with deep partial-thickness burns on the head.

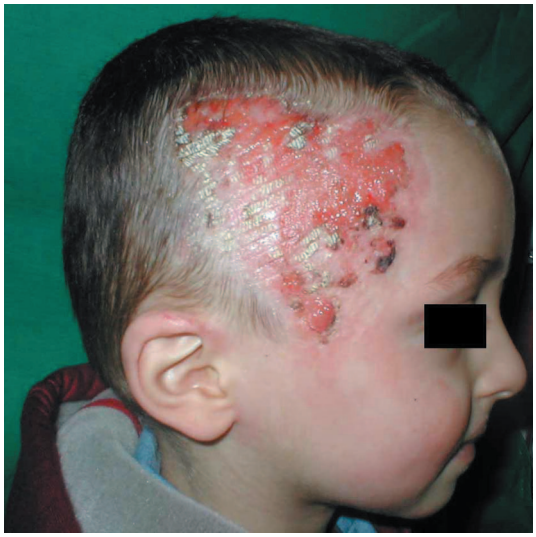

Fig. 2. At postoperative day 20, there is spontaneous re-epithelization after dermabrasion and three hyaluronan-based occlusive dressings.

healing (Figs. 1 and 2). Local infections were present in 10 percent of cases (31 patients). Hypertrophic healing processes were observed in all cases, but they disappeared within 1 year in 90 percent (270 patients) and in 2 years in 6 percent (18 patients); in only 4 percent (12 patients) did they last for more than 2 years and require treatment.

In our experience, hyaluronan dressings were a precious tool for avoiding escharectomy, skin grafting, and their complications in 83 percent of pediatric patients. They successfully covered the dermal plane, avoiding bad evolutions into full-thickness burns ("bridge treatments") and actively stimulating the regeneration processes. Good aesthetic results were obtained in all cases. The 10 percent infection rate suggests that risk factors for infection (diabetes and frankly necrotic tissue) could be possible contraindications to their use. The low rate of permanent hypertrophy can be explained by the silicone component of the matrix, which prevented excessive healing.

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Gaetano Esposito, M.D.
Pediatric Burns Department
Burn Center
S. Eugenio Hospital

Gianpiero Gravante, M.D.

Vincenzino Filingeri, M.D.

Daneila Delogu
Department of Surgery
University of Rome Tor Vergata

Antonio Montone, M.D.
Pediatric Burns Department
Burn Center
S. Eugenio Hospital
Rome, Italy

Correspondence to Dr. Gravante
via U. Maddalena 40/a
00043 Ciampino, Rome, Italy
ggravante@hotmail.com

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The Management of Human Bites with Regard to Blood-Borne Viruses

Sir:

The management of human bites with regard to blood-borne viruses is often neglected. Cases of hepatitis B and C and transmission of human immunodeficiency virus following a human bite have been reported. In a sharps injury, the risk of transmission from an infected source is one in three with hepatitis B, one in 30 with hepatitis C, and one in 300 with human immunodeficiency virus.[1] The risk from a bite may be lower, but in view of the potential implications of blood-borne viruses, these patients should be counseled appropriately.

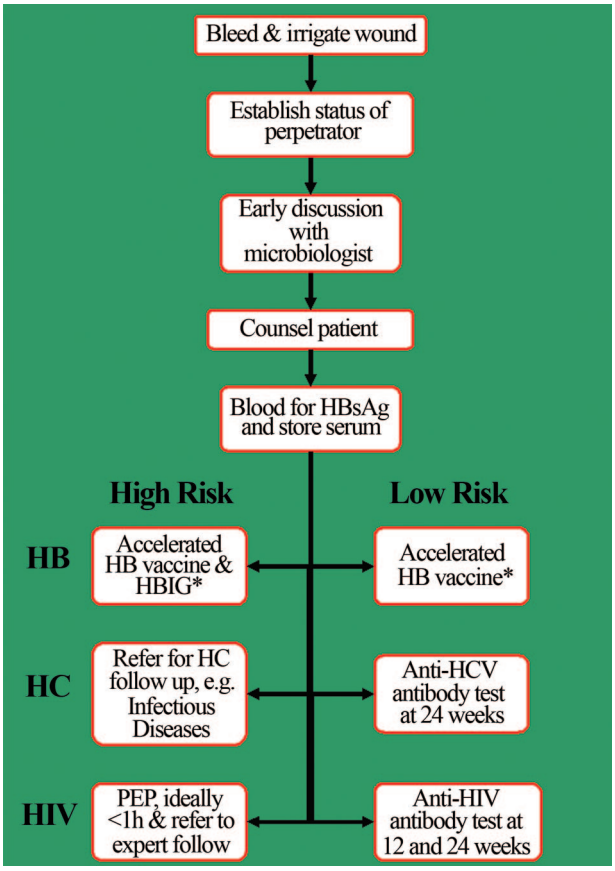

Fig. 1. Algorithm for the management of human bites with regard to blood-borne viruses. *For those who have previously received the hepatitis B vaccine, a booster (or hepatitis B immunoglobulin, if the patient is a nonresponder) should be considered. *HBsAg*, hepatitis B surface antigen; *HB*, hepatitis B; *HBIG*, hepatitis B immunoglobulin; *HC*, hepatitis C; *HCV*, hepatitis C virus; *PEP*, postexposure prophylaxis; *HIV*, human immunodeficiency virus.

We present our management policy, summarized in Figure 1.

Initial steps include encouraging bleeding and copious irrigation of the wound. The patient should be tested for hepatitis B surface antigen, and baseline serum should be stored for an extended period of time.

It is important to determine the blood-borne virus status of the perpetrator. Some of the risk factors are listed in Table 1.

Early discussion with the local microbiologist is beneficial. This specialist will know the up-to-date local incidence of blood-borne viruses. For example, in some areas of England, the prevalence of hepatitis C among intravenous drug abusers is greater than 50 percent.

Table 1. People Who Are More Likely to Have Blood-Borne Viruses

At risk for hepatitis B*
• Intravenous drug abusers
• Individuals who frequently change sexual partners
• Residents or residential accommodations for those with severe learning disabilities
• Inmates of custodial institutions
• Those born in, or whose parents were born in, countries with a high prevalence of hepatitis B
At risk for hepatitis C†
• Intravenous drug abusers
• Recipients of multiple transfusions prior to initiation of hepatitis C virus screening
At risk for human immunodeficiency virus‡
• Homosexual men
• Intravenous drug abusers
• People who have lived as adults in countries where heterosexual transmission of human immunodeficiency virus is common (notably southern, eastern, and central Africa)

*From the U.K. Department of Health. *Immunization against Infectious Disease 1996: The Green Book*. London: U.K. Health Department, September 1996.
†From Ramsay, M. E. Guidance on the investigation and management of occupational exposure to hepatitis C (PHLS Advisory Committee on Blood Borne Viruses). *Commun. Dis. Public Health* 2: 258, 1999. Erratum published in *Commun. Dis. Public Health* 3: 69, 2000.
‡From the Health Protection Agency. HIV and AIDS: Who gets HIV? Available at http://www.hpa.org.uk/infections/topics_az/hiv_and_sti/hiv/general.htm#who. Accessed November 22, 2005.

For hepatitis B infections, if the perpetrator is unknown or of low risk, patients should be offered an accelerated hepatitis B vaccine course at the time of assessment and at 7 and 21 days thereafter. When the perpetrator is known or extremely likely to be hepatitis B surface antigen–positive, then the patient should also be offered hepatitis B immunoglobulin. If the patient has previously received the hepatitis B vaccine, then the course should be completed or a booster should be considered, after the anti–hepatitis B surface antibody level has been determined. If the patient is known to be a previous nonresponder to the vaccine (anti–hepatitis B surface antibody level <10 miU/ml, 2 to 4 months after immunization), then he or she should be offered hepatitis B immunoglobulin and a vaccine booster should be considered.

For hepatitis C infections, if the perpetrator is unknown or of low risk, the patient should be advised to have a test for anti–hepatitis C antibody at 24 weeks. If the perpetrator is considered high risk, the patient should be referred to the gastroenterology, infectious diseases, or occupational health departments. Several blood tests may be offered, including hepatitis C RNA, for the early detection of infection.[2] Where appropriate, early treatment with interferon and ribavirin may prevent chronic hepatitis C infection.

For human immunodeficiency virus infections, if the perpetrator is unknown or of low risk, the patient should be advised to get tested for the anti–human immunodeficiency virus antibody at 3 and 6 months after the exposure incident. When the source of infection is known or is highly suspected to be human immunodeficiency virus–positive and there is a break in the skin or exposure of mucous membranes, postexposure prophylaxis using zidovudine, lamivudine, and nelfinavir is recommended.[3] The risk of human immunodeficiency virus transmission is thought to be higher after exposures involving larger volumes of blood and when the perpetrator has a high viral load or suffers from a terminal human immunodeficiency virus–related illness.[3] Evidence suggests that postexposure prophylaxis is most likely to be efficacious if it is started within an hour, but protection is not absolute and there maybe side effects and interactions with other drugs.[3] These patients must be followed closely by a physician familiar with postexposure prophylaxis.

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Sami A. Al-Ani, M.R.C.S.
Kallirroi Tzafetta, F.R.C.S., M.Phil.
Department of Plastic Surgery
Castle Hill Hospital
Rolf E. Meigh, F.R.C.Path.
Virus Laboratory
Castle Hill Hospital
Alastair J. Platt, F.R.C.S.(Plast.)
Department of Plastic Surgery
Castle Hill Hospital
Cottingham, United Kingdom

Correspondence to Dr. Al-Ani
Department of Plastic Surgery
Waikato Hospital
Pembroke Street
Private bag 3200
Hamilton 2001, New Zealand
sami@activatormail.com

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Correction to "Liposuction and Pulmonary Embolism: The Role of D-Dimers: Reply"

Sir:

In the April 15, 2007, reply to the letter entitled "Liposuction and Pulmonary Embolism: The Role of D-Dimers" (*Plast. Reconstr. Surg.* 119: 1621, 2007), the last name of the third author is misspelled. The correct spelling of that author's name is *Daniela F. Veiga*.